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# SURGICAL ASPECTS OF MENINGITIS*

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There is general agreement that in the last 50 years adequate surgical treatment of infections of the middle ear and mastoid has greatly reduced the incidence of meningitis and other intracranial infections. This can be confirmed by comparing cases of the present day with those described by William Macewen in his classic work, *Pyogenic Infective Diseases of the Brain and Spinal Cord*, published in 1893. Similarly, improved surgical cleansing and suture of open wounds of the head have effectively prevented many cases of meningitis. These facts are so well known that all that is necessary here is to remind ourselves what a valuable procedure it can be to release pus from the ear by prompt incision of the ear-drum or to spend time on careful treatment of the simple scalp wound.

## Historical

Horsley (1890) seems to have been the first in modern times to operate for meningitis; a year before lumbar puncture was introduced he established continuous drainage of the cerebrospinal fluid (C.S.F.) through a laminectomy wound; and he also irrigated the subarachnoid space with weak bichloride of mercury. About the same time Mayo-Robson (1890) and others drained the lateral ventricles. These pioneer efforts were important for the development of neurosurgical technique, but did not save lives.

Surgical methods were employed for three main purposes: (1) the application of antiseptics and antisera; (2) drainage of C.S.F., continuous or intermittent; and (3) irrigation of the cerebrospinal pathways with "physiological" fluids. The only antibacterial substance whose use seems to have been attended by any success was Flexner's meningococcal antiserum. It was introduced into the lateral ventricles (Cushing and Sladen, 1908) and later, with more success, into the cisterna magna (Ayer, 1920): the advantage claimed for these routes over the usual lumbar route was that the serum might more easily spread to all parts of the cerebrospinal pathways, especially when there was a spinal block.

Dandy (1924) concluded that antiseptics were of no value for pyogenic meningitis, but wrote: "Despite past and present failures, one cannot but feel that the future treatment of septic meningitis may yet lie in antiseptics or sera. Though seemingly impossible from our present knowledge, the detection of a specific antiseptic or of a specific serum so accurately balanced as to be without injury to the naked nervous system seems no more unlikely than Flexner's remarkable antimeningococcic serum, or the recent brilliant discovery by Sicard that lipiodol could be injected into the subarachnoid space, cast a dense shadow, and still be harmless to the delicate host."

Continuous drainage from the cisterna magna or lumbar subarachnoid space was tried by a number of workers (Dandy, 1924; Spurling, 1928; Thompson, 1937), while a few favoured continuous ventricular drainage, particularly when hydrocephalus was developing (Hampson, 1935). The reasons advanced for drainage were: to provide exit for the inflammatory products; to reduce intracranial pressure; and to promote increased flow of C.S.F. and thus to dilute the toxins. Kubie (1928) advocated that during drainage large amounts of hypotonic fluids should be given by vein or subcutaneously, as well as water by mouth, to promote the flow of C.S.F.

Irrigation with Ringer's solution was tried—from lumbar region to cisterna magna (Murphy, 1907), from ventricles to the lumbar subarachnoid space (Day, 1913), and from cortical subarachnoid space to cisterna magna (Eagleton, 1921)—but without any clear evidence of benefit; though Hampson (1935) mentioned a case in which, after blocking at the foramen magnum by presumed tonsillar cone, the flow of C.S.F. was re-established by instilling fluid into the lumbar space under positive pressure while intracranial pressure was reduced by ventricular drainage.

In small groups of cases good results were reported after the use of one or more of these methods, and in meningococcal meningitis the results in larger series indicated a modest improvement on what had been obtained before (Ayer, 1920; Hampson, 1935; Tripoli, 1936). However, the "surgical" methods were not generally adopted, and their use in acute meningitis was largely abandoned as soon as sulphonamides showed their worth—an event which indicates that the subject of meningitis is dominated by bacteriological considerations and that surgical methods can play but a subsidiary part. Destroy the bacteria, and the inflammatory products and toxins can be looked after by the meninges without drainage of the C.S.F. or irrigation of its pathways.

Since the advent of penicillin in 1942 there has been a revival of surgical methods of treatment; for penicillin does not pass the blood–C.S.F. barrier in sufficient amount, and thus must be directly introduced. Surgical methods have also proved their worth in the application of streptomycin; though in the case of this drug it is difficult to understand why the intrathecal route should be necessary, as it clearly is, since good levels of streptomycin in the C.S.F. can be obtained by intramuscular administration alone.

*Post-operative Meningitis.*—The interests of the neurosurgeon in meningitis develop naturally from his concern to prevent meningitis after head wounds or "clean" operations such as removal of cerebral tumour. When the first cerebral glioma was removed by Godlee in 1884, "a slow

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infection of the wound occurred, and after four miserable weeks of disappointed hopes the patient died of meningitis" (Trotter, 1934). At one time in my practice one-quarter of the operative deaths were from intracranial infection, in particular from meningitis (Cairns, 1939b). The local application of penicillin before closure of the wound has reduced the incidence of infection in our major cerebral and spinal operations from 4.4 to 0.9% (Pennybacker *et al.*, 1947). This subject need not be considered in detail, but there are a few points of general application.

## Pathology and Anatomy of Meningitis

I do not propose to describe the pathological anatomy of meningitis, but rather to touch upon some aspects of it which arise from surgical experience.

### I. The Resistance of Brain Tissue to Infection

From our work on operative infections we concluded that the brain itself is relatively resistant to bacterial infection, whereas the large cerebrospinal pathways—the ventricles and basal cisterns—are much more prone to become infected.

1. Culture plates exposed in the operative field always yielded bacterial growth and showed that even with the most careful aseptic technique it is impossible to prevent bacterial contamination of the wound during long intracranial operations (Cairns, 1939b).

2. On occasions cocci have been seen in films and cultures of material aspirated from the bed of a cerebral tumour in the first days after operation, yet no sepsis has developed.

3. In the days before penicillin the incidence of infection after posterior fossa operations was 1 in 12, all of them cases of meningeal infection, whereas after operations on the cerebral hemispheres it was 1 in 30, and the majority of these were infections of the bone and scalp (Pennybacker *et al.*, 1947). In other words, most of our cases of *intra*-cranial infection have been cases in which there was a wide opening of the arachnoid cisterns or ventricles, though it is likely that just as many bacteria fell into the brain tissue as into the cerebrospinal spaces.

The relative resistance of the brain tissue, which may be due to the speed with which large numbers of microglial phagocytes gather at any injured part of the brain, may account for the remarkable freedom of the brain tissue from gross infection in many forms of non-surgical leptomeningitis. In pyogenic meningitis bacteria often get into the brain as well as into the leptomeninges; for example, in pneumococcal meningitis they can be seen at necropsy in the brain tissue itself beneath the pia-arachnoid and around the walls of the ventricles, yet in the cases which survive an early death abscess within the brain is an event of great rarity. Furthermore, drainage or excision of an abscess of the cerebral hemisphere is rarely followed by meningitis, although the brain must often be contaminated at the time of operation.

It is astonishing to see what a perfect intellectual recovery can often follow the most intense meningitis. In most bacterial infections of the leptomeninges it seems as though the brain looks after itself. Indeed, as regards subsequent brain function the complication most to be feared is arteritis of the penetrating vessels, with resultant cerebral infarction, rather than any purulent cerebritis (Cairns and Russell, 1946; Daniel, 1949).

### II. "Saprophytic" Bacteria May Produce Meningitis

From our operative infections we have also learned that bacteria which are supposedly saprophytic to man may set up severe and even fatal meningitis and ventriculitis (Cowan, 1938); such organisms as *Micrococcus tetragenus, Diplococcus mucosus,* achromobacter, *Staphylococcus albus,* and certain Gram-negative bacilli. In these infections the general symptoms may at first be slight, and so also is the cellular reaction in the C.S.F. But the meningitis is of an *adhesive* type: it blocks the cerebrospinal pathways and thus produces progressive hydrocephalus, perpetuating the lesion for which operation was undertaken in the first instance. This slow progressive post-operative meningitis has become less common since the introduction of antibiotics, a point confirming its bacterial origin, for some were wont to regard it as "aseptic meningitis."

The condition is important in adding to our understanding of certain cases of spontaneous progressive hydrocephalus of infective or probably infective origin (Dott and Levin, 1936). In these cases there is often no initial acute illness or obvious history of meningitis, and the case may masquerade as non-infective hydrocephalus. But in her important review of the pathology of hydrocephalus Dorothy Russell (1949) has shown that at least some of them are of bacterial origin.

### III. The Influence of Raised Intracranial Pressure

In the acute stage of any form of meningitis intracranial pressure is raised. This rise of pressure is not usually an important cause of symptoms in the early stage—that is, before there has been time for adhesions to form—though it may become so later. In tuberculous meningitis we tried continuous drainage of the lateral ventricles in the acute stage in the hope of lessening the coma and other severe symptoms. There was no improvement; Dandy (1924) had the same experience on draining the cisterna magna in acute purulent meningitis.

In tuberculous meningitis we also found that withdrawal of the ventricular C.S.F. at its source was immediately followed by a very great rise of the protein content of the lumbar C.S.F. (from 100 to 4,000 mg. per 100 ml.) (Fig. 1) and an unusually early deposit of fibrin in the cisternae ambiens and interpeduncularis. Evidently, if C.S.F. is to be drained away in the acute stage of meningitis it should, if possible, be taken from the site of maximum inflammation and not from the ventricles. The diluting action of the newly formed ventricular fluid with its small protein content is probably useful in preventing deposition of fibrin and pus, with blockage of the cerebrospinal pathways. I must emphasize that these conclusions relate only to the acute stage: ventricular drainage may be of great value in the subacute and chronic stages of meningitis.

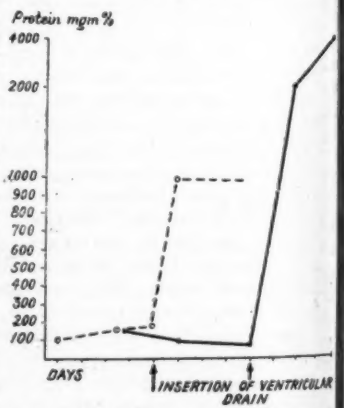


FIG. 1.—Two cases of tuberculous meningitis, showing rise of protein in lumbar C.S.F. following continuous drainage of lateral ventricle.

### IV. Blockage of the Cerebrospinal Pathways

Any part of the cerebrospinal pathways may become blocked in meningitis, but this is not serious unless it affects the main bottlenecks and thus interferes with the onward flow of the bulk of the cerebrospinal fluid. The blockage may be due to fibrin and inspissated pus or to granulation

tissue in various stages of organization, and symptoms may arise during the stage of active infection or subsequently. In the latter case the stage of active infection may have been inconspicuous, or it may have occurred many years before the onset of symptoms of obstruction. Thus, Baker (1934) reported a remarkable case of death from hydrocephalus after three weeks' illness in a girl of 17 who had had meningococcal meningitis at the age of 18 months.

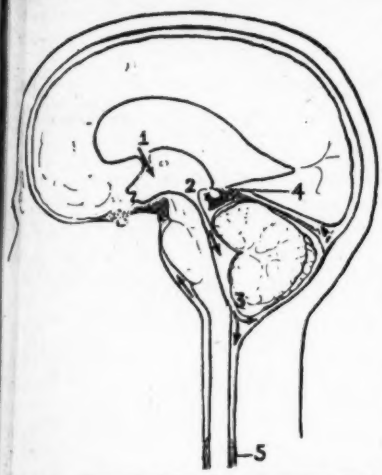


FIG. 2.—Sites of obstruction of cerebrospinal pathways. (1) Foramen of Monro; (2) aqueduct of Sylvius; (3) foramen of Magendie (and foramina of Luschka); (4) cisterna ambiens; (5) spinal subarachnoid space.

*X*-ray studies after air injection have enabled the site of obstruction to be determined with precision (e.g., Smith *et al.*, 1948, Figs. 5 and 6). Dyes have also been used, and we have found the use of antibiotics as trace substances convenient and helpful.

The main sites of obstruction are: (1) foramen of Monro, (2) aqueduct of Sylvius, (3) foramina of Magendie and Luschka, (4) cisterna ambiens, and (5) spinal canal. (Fig. 2.) It is possible also that obstruction as a result of meningitis might take place at the arachnoid granulations alongside the venous sinuses, but we have not obtained any convincing proof of that.

At the first three sites mentioned obstruction prevents the escape of C.S.F. from the ventricular system, with the result that there is little C.S.F. in the lumbar subarachnoid space, and the spinal pressure may fall. Dyes or antibiotics injected into the ventricles cannot be detected in the spinal C.S.F., and passage in the reverse direction is also blocked. These obstructions give rise to what Dandy (1918) called "obstructive hydrocephalus." On the other hand, if the obstruction is in the cisterna ambiens at the tentorial opening, C.S.F. escapes from the ventricular system and distends the infratentorial basal cisterns and spinal subarachnoid space, but cannot reach the subarachnoid space over the cerebral hemispheres whence it is absorbed. There is then abundant fluid on lumbar puncture, and dyes or antibiotics injected into the ventricles pass freely into the spinal C.S.F. This condition Dandy termed "communicating hydrocephalus."

Obstruction of the spinal subarachnoid space does not interfere seriously with the circulation of the C.S.F. or cause rise of intracranial pressure, but it is important in preventing antibiotics administered by the lumbar route from reaching the cerebral subarachnoid spaces and ventricles. Spinal block can be easily studied in life, and thus provides us with an indication of the course of subarachnoid obstructions in general. From daily lumbar puncture in our cases we have learned that the obstruction may be incomplete; that it may disappear within 24 hours or last several weeks or even longer; and that there is a strong tendency for it to disappear long before all the inflammatory granulation tissue has resolved.

### V. Foraminal Herniations of Brain Substance

In the obstructions which produce rise of intracranial pressure a complicating factor is introduced by herniation of parts of the brain through foramina, such as the foramen magnum and the tentorial opening. These obstructions have been mainly studied in relation to intracranial tumours (Spatz and Stroescu, 1934; Vincent *et al.*, 1936; Jefferson, 1938; Cairns, 1939a), but the same factors may operate in meningitis (Hampson, 1935). When the lateral ventricles are dilated the hippocampal gyri tend to be displaced into the tentorial opening (Fig. 3) and thus may convert a partial obstruction of the cisterna ambiens into a complete one. When the foramina of Magendie and Luschka are obstructed the fourth ventricle dilates, with displacement downwards of the cerebellar tonsils through the foramen magnum (Fig. 4), thus perhaps converting a partial block into a complete one, or adding yet more compression upon

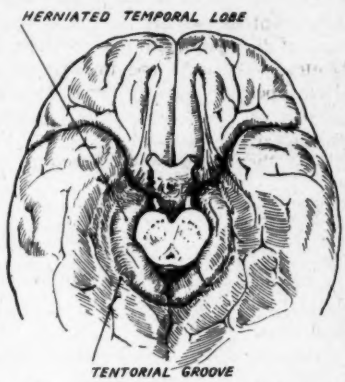


FIG. 3.—Downward herniation of temporal lobe through the tentorial opening.

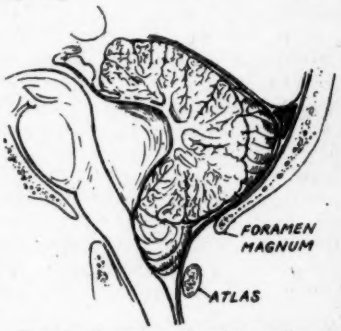


FIG. 4.—Downward herniation of cerebellar tonsils through the foramen magnum.

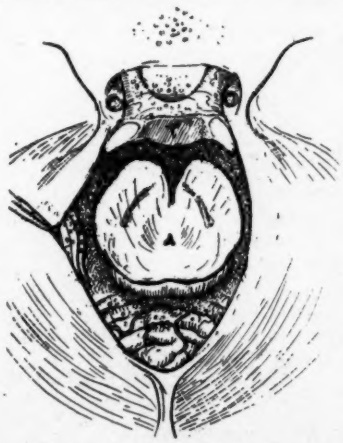

FIG. 5*a*.—Upward herniation of cerebellar vermis through tentorial opening in a case of communicating hydrocephalus due to occlusion of the cisterna ambiens by tuberculous granulation tissue.

FIG. 5*b*.—Normal tentorial opening. For comparison.

the adjacent medulla oblongata; or the cerebellar vermis may be displaced upwards through the tentorial opening, adding obstruction of the subarachnoid bottleneck around the midbrain to the already existing obstruction at the exits of the fourth ventricle. This type of obstruction is also seen in communicating hydrocephalus from obstruction of the cisterna ambiens (Figs. 5*a* and 5*b*).

These additional obstructive factors may operate intermittently, with corresponding fluctuations in the clinical state of the patient. At an early stage the brain herniation can be relieved by one or more ventricular tappings, and the patient may thus be tided over a dangerous period of obstruction. At a later stage the herniated brain may become impacted and then, though dangerous symptoms may be circumvented by continuous ventricular drainage the patient usually dies from compression of the brain stem. Death is often quite sudden, the clinical events leading up to it being inconspicuous.

### VI. Relapse

Relapse has long been recognized as a feature of meningococcal meningitis, and since other varieties of meningitis have been brought under control by sulphonamides and antibiotics they also have been shown to relapse. Thus it has been seen at Oxford in a high proportion of cases of pneumococcal meningitis (Smith *et al.*, 1946a), in meningitis due to *Pseudomonas pyocyanea* and other Gram-negative saprophytes (Lewin and Vollum, 1948), in tuberculous meningitis (Cairns and Taylor, 1949), and in influenzal meningitis (Neligan and Ounsted, 1949—personal communication).

Relapse or recurrence of meningitis may be due to infection from without, as in certain cases of chronic pneumococcal infection of the petrous bone and overlying dura, or to repeated infections through fractures involving the paranasal sinuses with tearing of the overlying dura. More commonly it is due to recrudescence of an infective focus within the central nervous system. These foci are minute abscesses, or collections of fibrino-purulent material containing bacteria in the subarachnoid space (Smith *et al.*, 1946a, Fig. 3) or within the lateral ventricle (Fig. 6); or, in the case of tuberculous infection, fibrino-caseous material containing bacteria in the meninges or brain (Fig. 7).

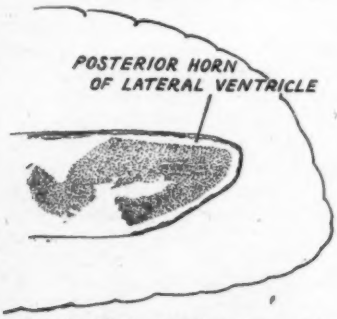


FIG. 6.—Fibrino-purulent clot containing Gram-positive cocci, in posterior horn of lateral ventricle in a case of pneumococcal meningitis after head injury. The patient was recovering from his first attack of meningitis, when he died of traumatic fat embolism.

The power of antibiotics to penetrate such non-vascular areas of infection is very limited, and the appropriate antibiotic must therefore be maintained in the C.S.F. until the fibrinous area has been completely absorbed, with release of all its bacteria, or until the lesion has become organized or enclosed in dense fibrous tissue, as may happen in tuberculous meningitis. This principle is important in the treatment of all cases of meningitis which are prone to relapse. In tuberculous meningitis, a disease which under treatment runs a very slow course, streptomycin must be maintained in the C.S.F. for many months.

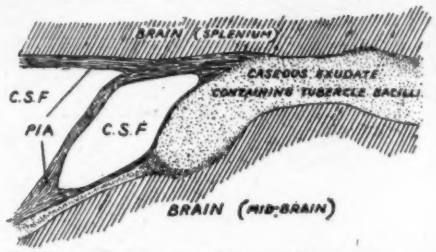


FIG. 7.—Fibrino-caseous material containing numerous acid-fast bacilli in cisterna ambiens. From a case of tuberculous meningitis which was fatal on the 70th day of streptomycin treatment. (Diagram by Dr. Dawn Bosanquet.)

### The Part of Surgical Operations in Meningitis

Operative procedures may be undertaken in connexion with meningitis for the following reasons: to prevent meningitis, to assist in rapid diagnosis of meningitis and of some of its complications, for the introduction of antibiotics, and to relieve or circumvent obstruction of the cerebrospinal pathways and the associated rise of intracranial pressure.

### Prevention of Meningitis

The importance of prompt surgical treatment of scalp wounds and infected ears has already been mentioned. During the recent war, as a result of segregation and follow-up of Service patients with head injuries, we learned that meningitis was more common after head injury than we had formerly thought, and especially after fractures of the anterior fossa. Further evidence on this point was forthcoming when patients with pyogenic meningitis began to recover as a result of penicillin treatment. Five of our first 38 cases of pneumococcal meningitis followed head injury.

#### Case Report

A man aged 44 (No. 20301/43) was admitted in a confused but not comatose state to the Radcliffe Infirmary on Dec. 17, 1943, on the third day of an attack of pneumococcal meningitis. He was treated with penicillin intrathecally and intramuscularly and made a prompt recovery. By Dec. 27 he was lucid, and neurological testing showed severe hyposmia, which he said dated from a head injury due to a motor-cycle accident some seven years before. Inquiries revealed that at that time he had had a bruise on the left eye and temple with epistaxis, but no fracture had been seen in the radiographs, and there had been no leakage of C.S.F. from his nose.

The story suggested that his meningitis might have resulted from bacterial infection through an old fracture involving the paranasal sinuses. Radiographs taken after he had recovered from the meningitis showed no definite signs of an old fracture, but it was thought that there might be a deficiency in the posterior wall of the left frontal sinus. At operation on Feb. 15, 1944, the left side of the anterior fossa was explored intradurally through a frontal osteoplastic flap. No abnormality was found in the dura over the left frontal sinus, but further back, over the ethmoidal sinus region, there was a smooth-edged cleft (1 by 0.3 cm.) in the dura into which passed a diverticulum of arachnoid of the inferior surface of the left frontal lobe (Fig. 8). This was evidently the remains of a brain herniation through a dural tear and fracture at the time of the head injury seven years before, but all that it now contained was a leash of small blood vessels and some C.S.F. When the vessels had been divided and the sleeve of arachnoid had been detached from the bone it was possible to pass a probe down into the ethmoidal sinus. The cleft was closed with a graft of temporal fascia.

The patient made an uneventful recovery and returned to work in April, 1944. During the next five years, up to the time of his last report in February, 1949, he had remained well and at work, though suffering occasionally from headaches.

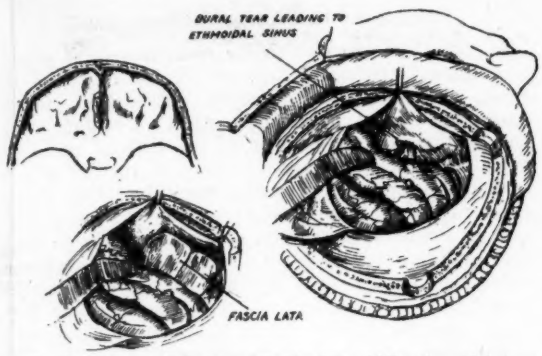


FIG. 8.—Dural tear and fracture into the left middle ethmoidal sinus. Repaired with graft of fascia lata.

I have seen meningitis develop at all stages between one day and 10 years after fractures of the anterior fossa involving the paranasal sinuses, with tearing of the overlying dura. Thus no one with an unclosed dural tear over a fractured ethmoid or frontal sinus can be regarded as safe from this risk. The meningitis, usually pneumococcal, may follow a cold in the head, but often it comes when the sinuses are not infected. In certain cases it is easy to predict the presence of a dural tear: cases with persistent cerebrospinal rhinorrhoea or with intracranial aerocele after head injury (Cairns, 1937), or cases like that just described in which there has already been one attack of meningitis. But there are other patients with anterior fossa fracture and loss of smell, but no rhinorrhoea or aerocele, who will get meningitis at some future time if a dural repair is not carried out. Much work was done on these cases during the war (Cairns, 1942 ; Calvert, 1942, 1947 ; Stewart and Botterell, 1947 ; Johnson and Dutt, 1947). Successful diagnosis depends largely on the radiographic evidence of fracture lines across the anterior fossa, and interpretation of these is still very difficult.

Fractures of the middle cranial fossa may establish a connexion between the middle ear and the subarachnoid space and thus give rise to meningitis, with or without escape of C.S.F. from the ear. In these injuries, other than those due to gunshot wounds, meningitis usually arises within the first few weeks if at all. In blunt injuries the path between ear and brain usually closes spontaneously. But after gunshot wounds operative dural repair may be necessary (Johnson and Dutt, 1947).

While on the subject of meningitis after head injury I must mention an uncommon complication which requires urgent surgical intervention. In a few cases the escape of C.S.F. from the nose may be so profuse that it is impossible to maintain an adequate level of penicillin in the C.S.F. by the usual intrathecal dosage. If meningitis has already begun in such a case it may be necessary to give penicillin by lumbar puncture twice or thrice daily in the usual doses and to operate to close the C.S.F. leak immediately the acute stage of the meningitis has been overcome.

### Diagnosis of Meningitis

Ventricular estimation and ventriculography are sometimes important in diagnosis. Now that there is an effective treatment for most varieties of meningitis, *early* diagnosis has become a matter of great importance. The advice of Goodhart and Still (1913) on the diagnosis of tuberculous meningitis—to wait for the disease to declare itself—is no longer sound. Every hour of delay in applying the appropriate antibiotic intrathecally seriously diminishes the patient's chances of recovery. To arrive at the correct diagnosis there is no need in most cases to employ operative methods ; all that is required is lumbar puncture and bacteriological examination of the C.S.F., the whole procedure being carried through with all the sense of urgency that would be applied to the investigation and treatment of a patient with perforated duodenal ulcer. But in some cases the diagnosis cannot be quickly solved without the use of ventricular estimation or ventriculography.

For example, if the meningitis begins with focal symptoms and raised intracranial pressure, as it may occasionally do in both tuberculous and pyogenic meningitis, there may be need to exclude the presence of tuberculoma or brain abscess ; for in the presence of a space-occupying lesion intrathecal injections of antibiotics may so alter the intracranial pressure as to precipitate catastrophic herniations of the brain. Streptococcal meningitis seems to be particularly dangerous in this respect, since it often coexists with a brain abscess whose symptoms are masked by the presence of meningitis (Smith *et al.*, 1946b) ; these cases must be distinguished from those in which meningitis and ventriculitis are the terminal events following rupture of a brain abscess into the ventricle.

There are also the cases in which the association of running ears with meningitis arouses suspicion that the meningitis is secondary to a brain abscess. There is yet another group of cases in which rapidly growing gliomas alongside the ventricles or basal cisterns may produce pleocytosis of the C.S.F., drowsiness, headache, and vomiting, and so simulate tuberculous meningitis. Red herrings are strewn across the path of clinical diagnosis in meningitis no less than in other diseases. By clinical methods, given time, they can be recognized for what they are ; but time is not to spare.

The doubts and difficulties can be promptly solved by tapping the lateral ventricles. If both ventricles yield abundant C.S.F. it is safe to assume that there is no space-occupying lesion in the cerebral hemispheres (ventricular estimation): if the result of ventricular tap is equivocal there should be no hesitation in injecting air for ventriculography. We have used this method on many occasions in cases of acute meningitis and suspected meningitis and can report nothing but good from its use. It does not seem to upset the patient or aggravate the meningitis, whether tuberculous or pneumococcal. If there is no evidence of a space-occupying lesion the appropriate antibiotic can be promptly given by lumbar or ventricular route. And if a brain abscess is revealed, prompt evacuation or removal of the abscess combined with intrathecal chemotherapy may be life-saving.

Burr-holes for ventricular studies may on occasions disclose some unsuspected condition in the subdural space. In one case of very severe pneumococcal leptomeningitis burr-holes for the introduction of penicillin into the ventricles disclosed free pus in the subdural space, which was thereupon treated by local instillations of penicillin through an indwelling rubber catheter (Cairns and Russell, 1946, Case 5). In another case, of an infant with pneumococcal meningitis who could not retain penicillin in her C.S.F. for more than a few hours after lumbar injection of the usual amounts and thus could not get rid of her meningitis, burr-holes revealed a large subdural hydroma into which the subarachnoid penicillin was shown to be leaking (Smith *et al.*, 1946a, Case 8). After the subdural hydroma had been drained the arachnoid leak evidently closed, for the patient regained the power of retaining penicillin in her subarachnoid space and then her pneumococcal meningitis promptly subsided.

It was from this case that we learned that there is no barrier to the passage of penicillin from blood stream to subdural space, or in the reverse direction, as there is

between blood stream and C.S.F. The dura and subdural space behave like somatic tissues. This fact has since been repeatedly confirmed by studying the transmission of penicillin from the blood stream to subdural haematoma (Schiller *et al.*, 1948).

The cases which I have cited in this section are uncommon ones, and ventricular studies are not often needed in diagnosis of meningitis. But they may be required urgently in any case, and no hospital can regard itself as fully equipped to diagnose meningitis unless it has neurosurgical facilities readily available.

There is one further point: bacteriological diagnosis of the type of meningitis may sometimes be obtained from the ventricular fluid when repeated examination of the spinal fluid has failed. This applies especially in tuberculous meningitis, though in most forms of pyogenic meningitis also the organisms are abundant in the ventricular fluid.

## Introduction of Antibiotics by Surgical Operation

### (a) Into the Lateral Ventricles

In our first cases of pneumococcal meningitis to be treated with intrathecal penicillin, early in 1943, the ventricular route was used; but we soon found that penicillin injected into the lumbar subarachnoid space spread quickly into the ventricles "against the flow," and also into the cerebral subarachnoid space (Cairns *et al.*, 1944). Thereafter the lumbar route was used routinely, the ventricular route being reserved for those cases threatened with spinal block. The signs of impending block have already been described (Smith *et al.*, 1946a), and subsequent experience has strengthened our belief that, whenever there is suspicion that penicillin injected into the lumbar subarachnoid space is not spreading freely to all parts of the cerebrospinal pathways, frontal burr-holes should be made for tapping the anterior horns of the lateral ventricles. When the earlier impure preparations of penicillin were injected into the lateral ventricles they occasionally produced a reaction, but nothing of importance seems to attend the injection of the crystalline preparations in the usual dose (for adults, 10,000–20,000 units).

The *cisternal route* can be equally effective in cases of spinal block, but when there is severe head retraction or restlessness it may be difficult or dangerous; and we have observed a greater liability to severe reaction to antibiotics —stupor, pin-point pupils, incontinence of faeces—from cisternal than from ventricular injection.

In tuberculous meningitis the ventricular route for streptomycin has proved of great value in a small proportion of the cases, particularly in those in which the daily lumbar puncture becomes difficult. For a variety of reasons, which have been described elsewhere (Cairns and Taylor, 1949), we believe that, though they may not prove necessary, it is nevertheless an advantage to make frontal burr-holes at the beginning of streptomycin treatment in all cases of tuberculous meningitis.

These burr-holes are useful for other purposes than diagnosis and therapy; by ventricular estimation, supplemented at a later date by ventriculography, something can be learnt of the condition of the lateral ventricles in meningitis. At the beginning of pneumococcal meningitis the ventricles are smaller than normal, but within a few days they become slightly larger than normal. In tuberculous meningitis the ventricles are usually already dilated by the time there are signs of meningitis—a fact which suggests that the initial stages of this disease are relatively symptomless.

We learn from ventricular studies that there is always some progressive dilatation of the ventricles in meningitis, even in cases which show little or no sign of obstruction and no appreciable sign of brain damage.

### (b) Into the Chiasmal and Adjacent Cisterns

In tuberculous meningitis the main deposit of granulation tissue is found at necropsy in the interpeduncular space, cisterna ambiens, cisterna chiasmaticus, and the adjacent sylvian fissures. These spaces are continuous with one another, and obstruction of the cisterna ambiens by fibrin or granulation tissue is likely to interfere with the spread of streptomycin, whether administered by the ventricular or by the lumbar route, to the more rostrally placed cisterns and to the sulci of the cerebral hemispheres. Therefore we have tried the effect of administering streptomycin direct into the chiasmal cistern through indwelling polythene tubes. Under local analgesia a small frontal flap is turned and the chiasmal region is exposed by lifting up the frontal lobe, and tubes are passed into the interpeduncular space and towards each sylvian fissure. Streptomycin solution (500 to 1,000 $\mu$g. per ml.) is instilled through the tubes two to four times daily in amounts up to 6 ml. at a time for 10 days. Streptomycin levels in the fluid from the tubes at the end of six hours have usually ranged from 20 to 40 $\mu$g. per ml.

We have used this method in seven patients, all but one of whom were infants or children. In one other case the tubes were inserted into the cisterna ambiens through a subtemporal approach, but very little fluid could be obtained from that cistern and the method seemed inferior to the chiasmal approach. Of the eight patients three made excellent recoveries and five died. In four of the patients, including one who recovered, the cisterns were already filled with organizing granulation tissue, and the tubes were probably of little use. The two best cases were those of an infant aged 20 months with intense infection and many positive films and cultures, and a boy of 9 years, both operated on about the eleventh day of symptoms, which was earlier than the others. In both cases abundant fluid escaped from the tubes in the intervals between streptomycin instillations.

The protein and cell content of the fluid from the interpeduncular region was always high, and in all except one case, in which there was a complicating spinal pachymeningitis, it was higher than that of the lumbar and ventricular fluids. For example, in one case, that of an infant of 8 months operated on on the fifteenth day of illness, samples of fluid obtained almost simultaneously showed:

| | Protein (mg. per 100 ml.) | White Cells (per c.mm.) | Mycobacterium tuberculosis |
|---|---|---|---|
| Ventricular .. .. .. | 40 | 62 | — |
| Lumbar .. .. .. | 130 | 98 | ++ |
| Interpeduncular .. . | 1,000 | 175 | ++ |

It seems reasonable to conclude that from an early stage the most intense disease is in the interpeduncular and adjacent cisterns.

I have no evidence as yet that this method of administering streptomycin improves the recovery rate. If the cisterns are already solid with fibrin and granulation tissue it cannot be effective. On the other hand, if the cisterns are patent, streptomycin administered by the lumbar or ventricular routes should reach all parts and therefore there should be no need for interpeduncular application. Yet, since the protein content of the C.S.F. in the interpeduncular region is so high, continuous drainage of the fluid from that region for some days might be advantageous. This remains to be proved. From the experience to date we are satisfied that the method can be carried out without harm even in young infants who are seriously ill.

### (c) Into the Subdural Space

In purulent pachymeningitis there is free pus in the subdural space and the condition is usually due to streptococcal infection, rarely β-haemolytic forms, and is secondary to spreading osteomyelitis of the skull following pansinusitis. The leptomeninges are often not infected until the terminal stages. Sometimes, however, the condition may accompany or follow leptomeningitis. The clinical picture is a sharply defined one, now modified, though not usually to an unrecognizable extent, by penicillin (Schiller *et al.*, 1948; Cairns and Schiller, 1948). Before the introduction of penicillin we treated 18 patients with this disease, and all died. Since early in 1943 ten cases have been treated with penicillin by the systemic, subdural, intraventricular, and subarachnoid routes, and seven recovered. In view of the fact that penicillin passes freely from the blood stream to the subdural space, it should theoretically be possible to treat this condition by the intramuscular route alone. But so far in practice it has proved necessary to instil penicillin solution into the subdural space at frequent intervals for several days through an indwelling catheter. One of the advantages of this method may be to prevent the formation of loculated subdural abscess, which is a common and dangerous complication.

## Obstruction of C.S.F. Pathways with Rise of Intracranial Pressure, and their Treatment

There are two varieties of obstruction to consider: (i) obstruction by inspissated pus or granulation tissue which arises while the infection is still active, and (ii) obstruction by fibrous adhesions which comes on after the infection has subsided, sometimes years later. In addition the effects of these obstructions may be intensified by herniations of brain tissue, which have already been described. In general, treatment of obstructions in the purulent stage of meningitis should be by intermittent or continuous drainage of C.S.F., open operations being reserved for the cases which have reached the stage of fibrous adhesions and clear C.S.F.

It will be convenient to consider the obstructions according to site, but first some general remarks must be made on the question of diagnosis. In a case of acute meningitis which is not progressing favourably frontal burr-holes should be made. The onset of obstruction should be suspected from changes in the pressure and content of the ventricular and lumbar fluids. If pressures are rising and the lumbar fluid is still abundant, it is probable that there is blockage at the cisterna ambiens. If the lumbar fluid is scanty the hydrocephalus may be due to obstruction at the foramina of the fourth ventricle. Further information can be obtained from observing the spread of antibiotics. For example, if the fourth ventricle is obstructed an antibiotic injected into the lateral ventricle cannot be detected in the spinal fluid two to six hours later; or the test may be applied in the reverse direction. To be sure, the patient will already be having the appropriate antibiotic before the test is required, but with forethought doses can usually be so spaced that a satisfactory test situation is provided. If not, then a different antibiotic can be used as the test substance: for example, penicillin in tuberculous meningitis (Smith and Daniel, 1947).

In infants ventricular punctures can be made through the anterior fontanelle, which also serves as a useful guide to the state of intracranial pressure. In children the degree of separation of the cranial sutures as shown by radiographs is a reliable guide to the onset and course of hydrocephalus.

The onset of ventriculitis is apparent from the rise of protein, and usually also of cells, in the ventricular fluid.

The site of obstruction can be determined precisely only by ventriculography or encephalography. With skill in its manipulation a relatively small amount of air will suffice. In meningitis that is chronic from the start air studies should usually be made at an early stage of the investigations.

### 1. Foramen of Monro

Dott (1927) has described a case of unilateral hydrocephalus following fibrous obstruction of one foramen of Monro in an infant, due to an inflammatory process of infective origin, though there was no previous history of meningitis. The obstruction was successfully relieved by making a hole in the septum lucidum so that all fluid from both ventricles drained away through the healthy foramen of Monro of the opposite side.

There is another variety of obstruction of the lateral ventricle which we have observed after penetrating wounds of the body of the lateral ventricle (Cairns, *et al.*, 1947) and which Dorothy Russell (1949) has seen after haemorrhage at birth. A septum forms between the roof and floor of the ventricle, closing off a part of the ventricle which contains choroid plexus, with the result that there is progressive hydrocephalus of that part of the ventricle. I know of no evidence that it may follow meningitis, but it is possible that it might do so. It is important to recognize this condition, since it is easily cured by removing the choroid plexus in the obstructed part of the ventricle.

### 2. Aqueduct of Sylvius

If a patient with purulent ventricular fluid begins to deteriorate, with rise of ventricular pressure and increase of the protein content of the ventricular fluid, the probability of obstruction of the aqueduct of Sylvius by a plug of inspissated pus is considerable. The outlook is bad in such cases, and I cannot lay claim to any success. The treatment which we advocate in such a case is drainage of the C.S.F. from the ventricles in the hope that the purulent obstruction of the aqueduct of Sylvius will resolve: first, intermittent drainage by means of repeated ventricular taps; if that is not sufficient, as judged by the clinical condition of the patient and the ventricular pressure, then continuous ventricular drainage. Irrigation with Hartmann's solution (Sachs, 1942–3) might also be tried. I have heard it suggested that insufflation of air by the lumbar route might be attempted, to blow the plug of pus out of the aqueduct into the third ventricle, but this is probably more than most patients with this condition could stand.

Glial stricture of the aqueduct of Sylvius is not uncommon, but there is no evidence that it arises as a sequel of meningitis (Russell, 1949).

### 3. Foramina of Magendie and Luschka

Obstruction at the outlets of the fourth ventricle may arise as a sequel of acute infection, when it is usually meningococcal, or from chronic forms of bacterial infection, when the variety of infecting organism is often undetermined. The obstruction may take place during the purulent stage, from silting up of the foramina by inspissated pus and fibrin; or at a later stage, when the C.S.F. has already become clear, from organization of granulation tissue. The site of the obstruction can be determined by air injection.

It is easy to reopen the foramen of Magendie by open operation in these cases, but if possible the operation should be deferred until the C.S.F. has become clear, the patient being tided over the acute stage by means of intermittent or continuous ventricular drainage. Operation at the stage of fibrous or glial adhesions is attended by the risk of recrudescence of the infection, and thus it should be accompanied by active chemotherapy.

If for any reason it seems inadvisable or impossible to deal direct with an obstruction in the fourth ventricle or in the aqueduct of Sylvius, an alternative pathway for the C.S.F. can be provided by ventriculo-cisternostomy, a procedure introduced by Torkildsen (1947). A catheter or polythene tube is passed into the posterior horn of the lateral ventricle and its other end is led into the cisterna magna. It is left *in situ*. This operation usually gives excellent results.

#### 4. Cisterna Ambiens

Obstructions at the cisterna ambiens cannot be removed surgically. Alternative pathways for the C.S.F. can be provided by various routes, of which probably the most satisfactory is an opening of the anterior wall of the third ventricle (third ventriculostomy) so that fluid escaping from the third ventricle passes into the sylvian fissures, thence over the convolutions of the cerebral hemispheres to be absorbed. This operation is sometimes successful, but may fail for a variety of reasons—closure of the ventricular opening, escape of the C.S.F. into the subdural instead of into the subarachnoid space, or because entry to the sylvian and other cerebral fissures is still obstructed as a result of the previous meningitis.

With obstruction at the cisterna ambiens there is a great collection of C.S.F. in the posterior fossa and spinal subarachnoid cisterns. In the purulent stage of the disease repeated lumbar punctures with withdrawal of large amounts of fluid may tide some patients over from the stage of complete obstruction until the cisterna ambiens partly reopens itself.

#### 5. Spinal Block

Spinal block does not usually produce symptoms, and its importance is that it interferes with the intrathecal administration of antibiotics. I have already indicated the alternative measures for continuing intrathecal therapy.

### Risks and Advantages of Operations

The operative methods now used in meningitis carry little risk. Cases requiring major operations are infrequent, and by far the most common procedure is the fashioning of burr-holes for access to the ventricles. In our experience intermittent drainage of the ventricles is preferable to continuous drainage, which carries with it the risk of secondary infection, now lessened by the use of antibiotics, and in infants the risk of cerebrospinal fistula once the drainage tube is withdrawn. The use of air to localize obstruction in the subacute and chronic cases is followed by the risk of reactionary rise of intracranial pressure, which must be guarded against by intermittent or continuous ventricular drainage for a few days, if the obstruction is not immediately dealt with surgically. Another risk is recrudescence of acute infection following operative relief of obstruction in chronic meningitis, but this can be countered by appropriate chemotherapy. For the rest the risks of surgical intervention in meningitis are very small.

In acute meningitis operative methods may be useful in preventing sedimentation of pus. In the unobstructed case withdrawal of C.S.F. from the ventricle, the lumbar region, or any other part of the cerebrospinal pathways and injection of antibiotic must increase considerably the circulation of the C.S.F. and its mixture with the antibiotic, especially if fluid is aspirated and reinjected several times. This effect may be the explanation of the puzzling fact that intrathecal streptomycin treatment is necessary in tuberculous meningitis although a theoretically adequate level of streptomycin in the C.S.F. can be obtained by systemic administration alone.

The extra movement and attention which patients with meningitis receive when they have ventricular burr-holes may well be good for them, particularly if they are inert and comatose. There is considerable evidence that gravity acts unfavourably on the course of meningitis. In fatal pneumococcal or other forms of pyogenic meningitis a mass of gelatinous material is often found in the posterior horns of the lateral ventricles containing pus cells and bacteria which must for the time being be impermeable to penicillin and hence a possible focus of relapse. In fatal tuberculous meningitis it is almost invariable to find that exudate is more intense upon the dorsal than on the ventral surface of the spinal cord. The reasonable explanation of these phenomena is that they are caused by gravity; and it may well be that the deposition will be prevented by frequent movement of the patient, and that restlessness is, within limits, a good thing for a patient with meningitis. I have been struck with the excellence of the results in patients with pneumococcal meningitis who are violently restless in the acute stage of the disease. The nursing of inert patients should therefore include frequent changes of position.

### Conclusion

I have tried to indicate the surgeon's approach to the subject, based on anatomy and morbid anatomy, without defining any particular province which shall be his and his alone. The techniques employed in treatment and the sense of urgency which is required in any particular case come easily to the neurosurgeon by virtue of his training and his daily work, but they are not his exclusive province. The contribution which operative methods can at times make to the diagnosis and treatment of meningitis is considerable, but it must always remain subservient to the main problem, which is one of bacteriology and chemotherapy.

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In a recent issue of the *Journal of the American Medical Association* (April 30, 1949, p. 1284) there is a description of the United States Navy's scheme to set up bone banks in some of its hospitals. It is considered that the plan, which has been made possible by the improved methods of freezing and preserving bone, will assist hospitals in which bone grafting is undertaken. Frozen human bone has been preserved for as long as 308 days in an ordinary ice-cream cabinet, and then used successfully in bone-graft operations.

# AYERZA'S DISEASE, SILICOSIS, AND PULMONARY BILHARZIASIS

BY

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Ayerza's disease was first fully described in a monograph by Arrillaga, of Buenos Aires, in 1913. Arrillaga claims that it is a morbid entity with a fairly constant clinical course and picture terminating with cardiac failure and an extreme degree of cyanosis, the latter feature leading him to give it the name "cardiacos negros." The subjects are adults. The predominant pathological change is sclerosis of the pulmonary artery and its branches. The lungs also show chronic changes, a fact which brings the entity into the group of cardio-pulmonary diseases. The aetiology and the cause of the extreme cyanosis have been regarded as somewhat of a mystery. Syphilis was formerly thought to be the cause of the pulmonary arteritis, but this has been disproved.

Since the publication of this monograph a number of cases considered to be of a similar nature have been recorded under such titles as Ayerza's disease, pulmonary arteriosclerosis, and sclerosis of the pulmonary vessels. These cases form a motley group. They come from various parts of the world in small numbers, often single examples. The subjects are of all ages, many in very early life. In a few instances the aetiology is obvious—such as those cases with congenital cardiac lesions. An occasional case is claimed to be syphilitic. Many are ascribed to the end-results of chronic lesions of the lung parenchyma, thus belonging to the cardio-pulmonary group. When advanced cor pulmonale has developed and the heart fails there is inevitably cyanosis, but only in a few instances has it approached the extreme degree described by Arrillaga.

This heterogeneous collection of cases of varying aetiology and manifestations clearly cannot explain the frequency and the consistent features of the disease described in Brazil. What, then, is the explanation of its presence in this geographical area ?

## Pulmonary Bilharziasis

In the course of the last twenty years studies by members of the Faculty of Medicine of Cairo have gradually uncovered manifestations of lesions of the pulmonary artery and its branches produced by the action of biharzial ova. Modern progress started in 1928 with the description by Sorour (1932) of the pathology, and Azmy and Effat in 1932 gave the first clinical account of two cases diagnosed during life. These pioneer communications were followed by clinical records by Day (1937) and by a very full pathological study by Shaw and Ghareeb (1938).

Since that time progress has been rapid, with studies by Moussa (1942), Bedford *et al.* (1946), Khattab (1946), Kenawy (1947), Erfan (1948), and others. These communications are of great interest and may be referred to for full details.

The clinical symptoms and physical signs, the radiological appearances of the lung and cardiovascular system, and the course and progress have been pieced together and correlated with the morbid anatomy. It is now possible to diagnose the condition clinically and radiologically at a fairly early stage during life, and numerous cases are being recognized.

Briefly, the initial morbid process may be said to be obliterative endarteritis of the small branches of the pulmonary artery resulting from the action of ova which reach the site as emboli. With repeated reinfections the process extends centrally. Finally, the main branches of the pulmonary artery may become dilated to aneurysmal proportions and cor pulmonale develops. The lung parenchyma, however, remains uninvolved or only slightly affected, and fibrosis is completely absent. So long, therefore, as the right ventricle, by hypertrophy, is able to force enough blood past the obstruction the lung tissue can oxygenate it satisfactorily. Hence cyanosis does not develop till the heart fails, and even at that stage cyanosis never reaches the degree described in cardiacos negros. The gross changes in the pulmonary artery and its branches led Shaw and Ghareeb to suggest the name of Egyptian Ayerza's disease for advanced cases. This has often been used, but the condition is now more generally known as cardio-pulmonary or pulmonary bilharziasis.

These cases prove that advanced disease of the pulmonary artery and its branches does not of itself produce cyanosis. The cases in Egypt also differ substantially from those in Brazil in the mildness or absence of pulmonary symptoms, though certain allergic manifestations such as asthma are now being studied.

## Is Silicosis the Primary Factor ?

Thus there are two geographical areas in which sclerosis of the pulmonary artery and branches occurs with considerable frequency but with certain differences in the clinical course. The Egyptian group proves that the special features of Ayerza's disease in Brazil cannot be ascribed solely to the changes in the pulmonary artery and its branches.

The Egyptian delta is a flat country lying little above sea-level and completely devoid of mines, and the subjects of pulmonary bilharziasis are nearly all farmers or from the families of farmers. The Brazilian subjects, on the other hand, are gold-miners working in valleys at an altitude of 14,000 feet (4,270 metres) in the Andes. The occupation suggests that silicosis may be the primary aetiological factor, while the tremendous altitude may account for the unusually high degree of cyanosis. Ayerza's disease thus can be reasonably explained as the result of silicosis occurring at great altitudes.

Dr. K. O. Courtney, of the Canal Zone Medical Service, who is familiar with the locality, states in a verbal communication that the cases with cardiac failure were formerly brought down to the plain by train. The railway rises to 16,000 feet (4,880 metres) before starting the descent, and deaths during the journey were not uncommon. Patients are now brought down by air. It is observed that on reaching the plain the cyanosis improves.

Pulmonary bilharziasis is unlikely to be the principal factor in Brazil in view of the long pulmonary course. *Bilharzia mansoni* is the only type present in Brazil, and ova of this variety cannot reach the lung until after the development of bilharzial cirrhosis of the liver, which is accompanied by splenomegaly, but it is possible that the condition of the liver and spleen respectively might have been erroneously ascribed to alcohol and malaria, both of which are mentioned by Arrillaga as aetiological factors. The existence of pulmonary bilharziasis, so far as I am aware, has not been reported in Brazil, though it must almost certainly occur there, and a case in Porto Rico was reported by Clark and Graeff (1935). The histology of pulmonary bilharziasis is so specific that it can be readily diagnosed when the possibility of its presence is once recognized. The differentiation of silicosis and pulmonary bilharziasis radiologically would certainly present difficulties and has not yet been studied, but there are several parts of the world where the two processes may coexist.

It is therefore suggested that Ayerza's disease as seen in Brazil is the result of silicosis occurring at high altitudes,

while the possibility of pulmonary bilharziasis as a main or contributory factor should also be borne in mind.


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# THE INCIDENCE OF CANCER OF THE UTERINE CERVIX

BY


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Although cancer of the uterine cervix when taken early is to a large extent curable, the proportion of cases coming to treatment at an early stage is so small that little impression is being made on its mortality rate. Not one case in ten reaches hospital with the disease confined to the uterus, and many come with such extensive lesions that only palliative treatment is possible. In spite of the efforts expended in educating the public on cancer, and the emphasis placed on the subject in our medical schools, much delay is still due to ignorance and neglect, but late diagnosis is also attributable in large measure to the insidious manner in which the disease develops. In cancer of the cervix there is no close correlation between the length of history and the extent of the disease, and more than half the women seen at Cardiff Royal Infirmary within three months of the first symptom are classified as having a stage 3 or stage 4 cancer (Maliphant, 1947).

Whereas early cervical cancer is usually symptomless, many cases are devoid of symptoms until they are far advanced, and this clinically mute phase is one of the main obstacles to early diagnosis. It is for this reason that in some countries, and notably in the U.S.A., women of cancer age are now being encouraged to undergo periodic gynaecological examination as the best and often the only means of ensuring prompt diagnosis. Cancer detection clinics have been established in most large centres, and the number of cases of cancer discovered in presumably well individuals has been so high that the representative character of the persons attending the clinics has been questioned (Jones and Cameron, 1947).

In the extensive literature on cancer of the cervix very little information is available on the number of living persons afflicted with the disease, and the purpose of this inquiry is to ascertain its incidence rate, together with the relative probabilities of the disease developing in the various age, civil state, and parity groups of the population. Such data would not only provide information on the number of new cases that would be expected in a particular group of women but may also have a practical bearing on problems relating to the aetiology and control of the disease.

Women who develop cancer of the cervix are measurably different from other women, and an attempt is first made to ascertain the degree to which the cancer hazard is affected by such variants as age, marital status, and parity. Many reports have shown the distribution of such characteristics in women who develop or die of the disease, but they have rarely shown the distribution of the same characteristics in the community from which the cancer patients have been drawn. It is with this object in view that our patients have been examined against the background of the local population. At Cardiff Royal Infirmary 1,200 consecutive cases seen during the 25-year period 1922–46 have been analysed. 80% were residents of Glamorgan. As 1931 was close to the middle year of this observation period the 1931 Census figures were used in the main as the standard of comparison. The age, civil state, and child-bearing experiences of the community are then correlated with the tendency to develop cervical cancer.

## Age

In this series 98.5% of the patients were married, and their ages ranged from 20 to 80 years. Their distribution by age is shown in Table I, together with that of married (widowed and divorced) women in Glamorgan at the 1931 Census.

TABLE I.—*Distribution by Age*

| Age Group (Years) | Cancer of Cervix. C.R.I., 1922–46 | | Married Women of Glamorgan: 1931 Census | | Estimated Relative Risk of Contracting the Disease (a) as % of (b) (c) |
|---|---|---|---|---|---|
| | No. | % (a) | No. | % (b) | |
| 20–24 | 5 | 0·4 | 15,877 | 5·2 | 7 |
| 25–29 | 14 | 1·2 | 32,306 | 10·7 | 11 |
| 30–34 | 53 | 4·4 | 38,399 | 12·7 | 35 |
| 35–39 | 123 | 10·2 | 38,540 | 12·7 | 80 |
| 40–44 | 162 | 13·5 | 35,692 | 11·8 | 114 |
| 45–49 | 205 | 17·1 | 33,164 | 11·0 | 155 |
| 50–54 | 211 | 17·6 | 30,214 | 10·0 | 176 |
| 55–59 | 187 | 15·6 | 25,443 | 8·4 | 186 |
| 60–64 | 126 | 10·5 | 19,798 | 6·5 | 161 |
| 65–69 | 75 | 6·2 | 14,603 | 4·8 | 129 |
| 70+ | 39 | 3·5 | 18,509 | 6·2 | 56 ? |
| | 1,200 | 100 | 302,485 | 100 | |

Although cancer of the cervix may be seen at extremes of age, it is predominantly a disease of middle life, and only 20% of the patients had reached the age of 60. A little less than one-third (30%) were under 45, a little over one-third (36%) were 55 or over, and the remaining one-third (34%) were in the decade 45–54 years. It is not so much the age of the individual as the senescence of the uterus which determines the occurrence of the disease, and if regard be paid to the number of women living at a given age it is observed that the cancer hazard continues to rise until the age of 60. The risk in the various age groups may be expressed by showing column (a) of Table I as a percentage of column (b). It is noted that the relative risk of the disease developing increases enormously from age groups 25–29 to 30–34, and at ages 35–39 it is more than twice as high as at ages 30–34. The rate of increased relative risk continues to rise until the peak is reached at ages 55–59. From this point it shows a steady decline, the rate becoming steeper and steeper in older women. Beyond the age of 70 this gradient is probably fictitious, as our series, in common with others compiled from hospital figures, is likely to be deficient in women over this age.

Lane-Claypon (1927) has drawn attention to the divergence between the age incidence of uterine cancer as shown by hospital figures and by mortality rates. The older the individual the less likely is she to attend hospital, but Mackenzie (1939) has shown that it is not until the age of 70 is reached that age as such acts as a serious deterrent to obtaining treatment. The inclusion of missing cases at ages of 70 and over in the above series would mean an adjustment throughout the entire percentage distribution, and

this in turn would reflect on the relative risks given in column (c), but it is unlikely that the main deductions would be falsified.

### Civil State and Child-bearing

Of the cancer patients 18 (1.5%) were unmarried and non-parous. Two single women who had borne children were regarded as "married" for the purposes of this inquiry. At the 1931 Census 22% of Glamorgan women over 20 years were unmarried, and at ages 35–64 years—the time of life in which cervical cancer is most common—10% were unmarried. The low incidence of the disease in single women is probably attributable to the comparative infrequency of cervical infection in this group. That cervical cancer does occur in single women, and apparently in virgins, recalls the inherent tendency of some individuals to develop malignant disease in the absence of any recognizable extrinsic predisposition.

That the increased risk in married women is due solely to child-bearing has been disputed, and sexual intercourse has been indicated as a factor of some aetiological importance. Here an attempt has been made to measure the relative importance of these two factors—sexual intercourse and child-bearing—by comparing the relative risks of the cancer developing in single women, nulliparous married women, and parous married women. The proportions of the cancer patients falling into these three groups were known directly, but the numbers in the community were estimated in the following manner. In March, 1946, a Family Census was conducted by the Royal Commission on Population, and on request the secretary of the Commission supplied Dr. Greenwood Wilson, medical officer of health for the City of Cardiff, with a duplicate set of those Census cards which related to Cardiff women. From an analysis of these by age, social class, and number of live births the proportion of married women in Cardiff who were childless in 1946 was calculated. It was found to vary within the limits of 13 to 18%, according to age and social class, but the mean figure for those over 40 in all classes was precisely 15%. The 1931 Census returns for the County of Glamorgan showed 21,613 unmarried women and 182,851 married women of cancer age (35–64 years), and on the assumption that 15% of the married women were childless the proportions of single women, childless married women, and parous married women in the community were obtained (see Table II).

TABLE II.—*Comparison of Civil State and Parity of Glamorgan Women of Cancer Age (35–64 years) (1931 Census), with 1,114 Women of Same Age Group with Cancer of Cervix*

| | Cancer of Cervix (a) | Community (b) | Estimated Relative Risk of Contracting the Disease (a) as % of (b) |
|---|---|---|---|
| Unmarried ... ... | 15 (1·3%) | 21,613 (10·5%) | 12 |
| Married { nulliparous | 45 (4·0%) | 27,428 (13·4%) | 30 |
| Married { parous | 1,054 (94·7%) | 155,423 (76·1%) | 125 |
| | 1,114 (100%) | 204,464 (100%) | |

From this it may be seen that for women of 35–64 years (1) approximately 99% of the cancer patients were married, as compared with only 90% of the community; (2) of 60 nulliparous women in the cancer series only 25% were unmarried, the corresponding figure for all nulliparous women in the community being 44%; (3) 94.7% of the cancer patients, as compared with 76% of the women of the community, gave a history of one or more confinements; and (4) only 4% of the married women with cancer were childless, as compared with 13.4% of the women of the community. The figures showing the relative risks run by the three groups indicate that when a woman has reached the age of 35 or more her risk of contracting cancer of the cervix is twice as great if she has been married, and ten times as great if she has also had children, than if she were single.

### Repeated Child-bearing

As child-bearing is so closely correlated with cancer of the cervix some addition to the risk would be expected after each confinement, but previous studies have failed to establish any association between the *number* of pregnancies and the supervention of cancer (Lane-Claypon, 1927).

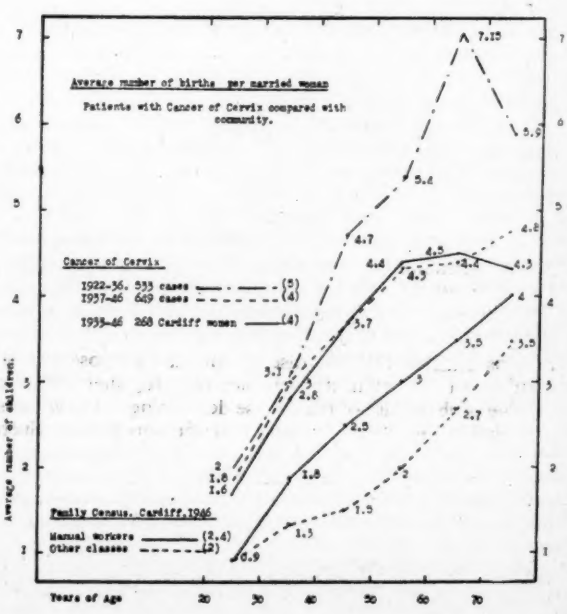
The average number of births (excluding abortions) among 1,182 married women with cervical cancer was 4.5, while the general average fertility of married women aged 40 and over in the community was 2.8 (Cardiff, 1946). But the deduction from this evidence that cancer of the cervix is related to large families could be challenged on three grounds:

1. The two series differ in point of time—the cancer series relating to a 25-year period, 1922–46, and the Family Census to the end-point of this period. During the interval covered by the cancer series there has been a decline in the average size of family, and the difference between the two means may reflect merely this decline in fertility.

2. The Family Census figures, which formed the only available standard of comparison as regards parity, relate to Cardiff women, whereas 80% of the cancer patients came from outside

TABLE III.—*Average Number of Births per Married Woman. Three Groups of Patients with Cervical Cancer Compared with the Wives of Manual Workers in Cardiff generally (Family Census 1946)*

| Age Group | Family Census 1946 | | Women Suffering from Cancer of Uterine Cervix | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Glamorgan Women | | | | Cardiff Women Only | |
| | | | 1922–36 | | 1937–46 | | 1933–46 | |
| | No. of Women | Mean No. of Births | No. of Women | Mean No. of Births | No. of Women | Mean No. of Births | No. of Women | Mean No. of Births |
| 20–29 | 699 | 0·93 | 6 | 2·0 | 9 | 1·8 | 3 | 1·6 |
| 30–39 | 1,135 | 1·83 | 88 | 3·1 | 83 | 3·0 | 29 | 2·83 |
| 40–49 | 1,082 | 2·55 | 170 | 4·7 | 206 | 3·7 | 91 | 3·7 |
| 50–59 | 959 | 3·0 | 163 | 5·4 | 210 | 4·3 | 84 | 4·4 |
| 60–69 | 698 | 3·5 | 91 | 7·15 | 118 | 4·4 | 38 | 4·5 |
| 70+ | 443 | 4·0 | 15 | 5·9 | 23 | 4·8 | 23 | 4·3 |
| | 5,016 | 2·4 | 533 | 5·0 | 649 | 4·0 | 268 | 4·0 |



the city boundaries, so the differences could be explained if it were shown that the average size of family was greater among women outside the boundaries, from which most of the patients were drawn.

3. The Family Census figures relate to all social classes, while the cancer cases were patients seen in hospital, so the larger families in the cancer series could be attributed to their belonging to the lower-income groups.

To meet the first two points a separate analysis is made, subdividing the cancer series into three parts: those seen before 1937, those seen during the period 1937–46, and a separate group relating to Cardiff women only (Table III). For each group the average number of births per woman was calculated, and a comparable standard is provided from the Family Census. To meet the social class objection the Family Census figures were formed into two groups: (*a*) the wives of professional men, salaried workers, and employers of labour (1,765); and (*b*) the wives of skilled and unskilled manual workers (5,016). This second group is considered to be a suitable standard of comparison for the hospital patient series.

It is to be observed that no difference in fertility is apparent between Cardiff women suffering from cervical cancer and those residing in other parts of Glamorgan. When the fertility of the more recent group of cancer patients is compared with that of the lower-income groups of the community it is noted that the average size of family is always slightly greater in women with cancer, and this is true whether women of the same age groups are compared or whether cancer patients are compared with Census figures applicable to women ten years older. The consistency of the excess in every age group obviates the need for any arithmetical tests of significance.

In Table IV the relative risk of incurring the disease is calculated in women of 40 and over according to parity. Women under 40 have been excluded from this table, as the community figures would be weighted by large numbers whose families would not be complete and in whom the hazard of cancer would be small. These figures indicate

TABLE IV.—*Percentage Distribution by Number of Children for (a) Married Women Suffering from Cervical Cancer and (b) Wives of Manual Workers (Cardiff, 1946). Women of Completed Fertility Only, Aged 40 and Over*

| No. of Children | Cancer of Cervix Glamorgan, 1937–46 (a) | Family Census Cardiff, 1946 (b) | Estimated Relative Risk of Developing Cancer (a) as % of (b) |
|---|---|---|---|
| 0 | 32 (5.1%) | 464 (14·5%) | 35 |
| 1 | 84 (13·5%) | 549 (17·2%) | 78 |
| 2 | 115 (18·5%) | 596 (19·0%) | 97 |
| 3 | 95 (15·2%) | 463 (14·5%) | 105 |
| 4 | 69 (11·1%) | 342 (10·7%) | 104 |
| 5 | 58 (9·3%) | 228 (7·1%) | 130 |
| 6 and over | 171 (27·3%) | 540 (17·0%) | 160 |
| | 624 (100%) | 3,182 (100%) | |

that women with many children suffer from cervical cancer more frequently than do women with few children or only one child, and the relative risk increases slightly with each confinement, so that the woman who has had six or more children is exposed to a risk twice as great as the woman who has had only one child. They do not support the view that one childbirth is as effective a cause of cancer of the cervix as repeated labours.

It is generally acknowledged that cancer of the cervix also has social and racial distinctions, but these have not been explored in this survey. There can be little doubt that the disease is more common in the poor of any community (Stocks, 1947), and this is not attributable solely to increased child-bearing. As the social scale is descended there is a small increase in the number of children per family, but other factors are probably operative in the lower-income groups, and more would seem to depend on bad environmental conditions and defective personal hygiene than on the bearing of larger families. It has also been claimed that habits and customs are responsible for the relative infrequency of the disease in women of the Hebrew race. If Jewesses were as susceptible as Gentiles to cervical cancer the local Jewish women might have been expected to contribute to the series under review, but not one of the 1,200 patients was Jewish. The relative immunity of Jewesses to cervical cancer is not clearly understood. It has been attributed to the observance of the Mosaic Code by married Jewesses, with its laws of separation and insistence on genital cleanliness, and it has also been ascribed to the practice of ritual circumcision, but the view that it is a fundamental racial character acquired through inheritance is perhaps still the most acceptable.

## Estimated Incidence

The incidence rate of the disease—the relative number of new cases occurring annually—may be determined on the basis of mortality or morbidity records, but mortality tables for cervical or uterine cancer are still difficult to interpret. Neither is it easy to obtain data directly concerning the number of living persons suffering from the disease. The number of women with cancer is larger than the number with diagnosed cancer, and still larger than the number seen at hospitals. In country districts relatively more persons with cancer fail to obtain hospital attention, and, in order to keep the number of such persons as small as possible, an estimate is best made in an area with good hospital facilities, reasonably accessible to all groups of the community.

Cardiff, with its relatively compact population, seemed to lend itself to this form of inquiry. Its sick and infirm are received by three large hospitals, and from their combined records it was found that during the 12-year period 1935–46 the mean annual number of new cases of cancer of the cervix diagnosed in Cardiff women was 22. This figure required adjustment to allow for the few cases which may have been treated elsewhere, and also for those who may have died at home, untreated or undiagnosed. With these adjustments, it was computed that 30 new cases of the disease develop each year in the women of Cardiff. As no evidence was found that patients coming to the Infirmary from outside Cardiff made the series less representative of cancer of the cervix cases in Cardiff, the distribution by age, marital status, and fertility of these 30 women is assumed to correspond with that of the main series as shown in Tables I and II. Relating the distribution so obtained to the population as recorded in the 1939 Register, the cancer hazard in women of ages 35 to 64 years, according to civil state and parity, is shown in Table V.

TABLE V.—*Estimated Risk of Cancer of the Cervix Developing at Ages 35–64 Years for Single and Married, and for Parous and Non-parous, Women*

| Civil State and Parity | Cardiff C.B. Population, 1939 Register | Estimated No. of New Cases of Cervical Cancer per Annum | | Estimated Annual Risk of the Disease Developing at Ages 35–64 Years |
|---|---|---|---|---|
| | | No. | % of Total | |
| Married women: | | | | |
| Non-parous .. | 7,294 | 1·128 | 4 | 1 in 6,500 |
| Parous .. .. | 41,333 | 26·705 | 94·7 | 1 in 1,500 |
| Total married women | 48,627 | 27·833 | 98·7 | 1 in 1,700 |
| Single women .. | 7,907 | 0·367 | 1·3 | 1 in 21,500 |
| Total women .. | 56,534 | 28·2 | 100 | 1 in 2,000 |

From the foregoing it would seem that the probability of the disease developing in any one year in women of this age group ranges from 1 in 1,500 in parous women to

1 in 21,000 in single women. In Table VI a more detailed examination of the risk in married women is made according to age, against the 1931 Census figures.

TABLE VI.—*Estimated Risk of Cancer of the Cervix Developing in Married Women at Increasing Years of Age*

| Age | Cardiff C.B. Population, 1931 Census | Estimated No. of New Cases of Cervical Cancer per Annum | Estimated Annual Risk of the Disease Developing |
|---|---|---|---|
| 20–29 | 8,131 | 0·48 | 1 in 17,000 |
| 30–34 | 7,147 | 1·32 | 5,400 |
| 35–39 | 7,022 | 3·06 | 2,300 |
| 40–44 | 5,522 | 4·05 | 1,360 |
| 45–49 | 6,113 | 5·13 | 1,190 |
| 50–54 | 5,690 | 5·28 | 1,080 |
| 55–59 | 4,724 | 4·68 | 1,000 |
| 60–64 | 3,932 | 3·15 | 1,250 |
| 65–69 | 3,117 | 1·86 | 1,700 |
| 70–74 | 2,103 | 0·75 | 2,800 ? |
| 75–79 | 1,214 | 0·18 | 6,730 ? |
| 80+ | 865 | 0·06 | 14,400 ? |
| | | 30·00 | |

It will be observed that the cancer hazard is maximal during the sixth decade, when it is of the order of 1 in 1,000. Attention has been drawn earlier to the probable deficiency of patients of 70 and over in this series. This may require some adjustment of the number of new cases—increasing the numbers at ages 70 and over, and lowering by a corresponding amount the numbers under 70. As a result the risk of the disease developing at 70 and over is probably greater than the figures in Table VI suggest, but it is unlikely that the small adjustments required at ages under 70 would materially affect the calculated risks.

## Discussion

Although cancer of the cervix does occur in unmarried women, and apparently in virgins, it is predominantly a disease of married life, showing a predilection for women who have borne children. What influence child-bearing has on the cervix to render it especially susceptible to cancer is not known, but the operative factor, whether traumatic, infective, or hormonal, has to exert its action for many years before the specific effect is shown. In this series 157 of the cancer patients were confined on only one occasion, and a mean interval of 20 years elapsed before the malignancy was discovered.

In 11% cancer appeared within 10 years of parturition, in 17% the interval exceeded 30 years, and in the remaining 72% the interval between the confinement and the cancer ranged from 10 to 30 years. The length of this interval had no influence on the morbid anatomy of the lesion or on the clinical course of the disease (Maliphant, 1947). Neither did the nature of the confinement seem to be significant: 82% of the parous cancer patients had normal obstetric histories, with an average of over four unassisted deliveries per patient; 15% had at least one instrumental delivery; and in 3% one or more of the confinements were described as difficult. It is highly probable that figures of this order would be found in a control series of women not suffering from cancer, which would not lend support to the view that trauma itself is an important causative factor in cervical malignancy.

Although the severe tears which may accompany a difficult instrumental delivery do not seem to be any more likely to lead to cancer in later years than the small lacerations concomitant with natural birth, they both allow organisms easy access to the cervical tissues. Infection, by stimulating hyperplasia, heteroplasia, and heterotopia of the glandular epithelium, disturbs the epithelial equilibrium at the squamo-columnar junction, and the resulting erosion has been described as a battlefield on which two types of epithelium are the contestants. Erosions are commonly inflammatory in origin, but similar epithelial changes may result from hormonal influences, and, once established, such areas of epithelial restlessness seem to be of paramount importance as forerunners of cancer. Nevertheless, the percentage of erosions which become cancerous is very small. It has been estimated that more than half the adult female population have infected cervices, and for every woman with an infected cervix who develops cancer there would appear to be approximately a thousand who do not (Table V).

Chronic cervicitis is a precursor of cancer only if it exists in conjunction with some unknown factor of individual susceptibility. This may be some form of hereditary predisposition or be dependent upon some underlying metabolic or nutritional disturbance. In this connexion it is noteworthy that Ayre (1947) found evidence of excessive tissue oestrogens coupled with low thiamin excretion in women suffering from cancer of the cervix, and he suggests that the disease may prove to be the abnormal response of cervical epithelium to chronic infection when it exists in the presence of nutritional deficiency of thiamin and a consequent excess of the specific growth hormone, oestrin. In any event, chronic cervicitis may be regarded as only one of several aetiological factors, and, even if it were established that clearing up cervical infection would prevent cancer, to prevent one case it would be necessary to maintain in a healthy state the cervices of about a thousand women. It is probable that the medical profession, by treating cervicitis, is daily making a small contribution to prophylaxis, but there can be little prospect of any appreciable reduction in the incidence of the disease by such measures.

The only immediate hope of reducing the persistently high mortality from cervical cancer is by discovering more cases at an early stage. There is room for further educational effort to persuade women to report symptoms and to see that every woman who reports suspicious symptoms is thoroughly investigated. Diagnosis at the earliest phase could be possible only by routine examination of the apparently healthy. The annual or semi-annual examination of parous women over 35—the age at which the prevalence of the disease shows a rapid rise—could not fail to lead to the discovery of many cancers still in their silent phase, but the practical difficulties in instituting such measures for the community are evident. On the basis of the incidence rate found in this inquiry, it would seem that even in the more vulnerable fraction of the community —parous women aged 35 to 64—only one cervical cancer would be found annually in every 1,500 women examined, although no doubt other lesions, both benign and malignant, of the exposed sites would also be discovered.

Considerable interest is being shown in the various smear techniques as developed by Papanicolaou and Traut (1943) for the diagnosis of malignant disease of the genital tract, and in their applicability to mass surveys. In suspect cases these cytological methods cannot displace biopsy, but they may make an important contribution to the control of cancer as a screening test for the detection of symptomless cancer in the community.

## Summary

The distribution of certain characteristics in a series of 1,200 women suffering from cancer of the uterine cervix is compared with the distribution of the same characteristics in the community, and the differences are considered to measure the differences in the risk of incurring the disease.

Cancer of the cervix is a disease of middle life, but the risk of contracting the disease continues to rise until the age of 60.

Beyond this age the risk shows a steady decline: while the female population is decreasing, the incidence of cervical cancer is decreasing at a faster rate.

The cancer hazard is increased by marriage irrespective of child-bearing, but the disease shows a predilection for women who have borne one or more children. Its occurrence seems to be independent of the nature of the confinement, but each pregnancy adds slightly to the risk of cancer developing in later years. Whether the responsible agent associated with child-bearing is infective or hormonal, it takes an average period of 20 years to produce its effect.

In women of cancer age (35–64 years) the probability of the disease developing in any one year seems to range from 1 in 21,000 single women, through 1 in 6,500 in childless married women, to 1 in 1,500 in parous women.

There is little prospect of effecting any appreciable reduction in the incidence of the disease by prophylactic measures, and the pressing need is diagnosis at a stage when cure is not only possible but probable by existing therapeutic methods. The role of periodic health examinations in the detection of symptomless cervical cancer in the community is discussed.

I am indebted to Dr. Lewis-Faning, statistician to the Department of Preventive Medicine of the Welsh National School of Medicine, for invaluable advice on the statistical aspects of this paper. My thanks are also due to Dr. Greenwood Wilson and to his chief clerk, Mr. Brain, for analysing the Family Census returns; to Dr. D. G. Morgan for details of cancer admissions to Llandough and St. David's Hospitals; and to my colleagues in the department of obstetrics and gynaecology for access to their case records.

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# PSYCHIATRIC PATIENTS AND THE DISABLED PERSONS (EMPLOYMENT) ACT

BY

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In December, 1946, a system of weekly conferences between us and the disablement rehabilitation officers of the Camberwell Labour Exchange was instituted at the Maudsley Hospital for all patients presenting problems in the finding and choice of work.

The patient was prepared for the conference by at least one preliminary interview with the psychiatric social worker in which the purpose of registration under the Disabled Persons (Employment) Act was explained and his aspirations in the field of possible employment discussed. At the subsequent conference, when the medical and social aspects of the patient's needs could be explained to the D.R.O., doctor and social worker were able to contribute suggestions which seemed indicated as the interview proceeded. This arrangement was of particular value, as the D.R.O. alone would not have been in a position to judge what concessions he should make to the patient's objections or hesitations. It was also useful for the hospital team to be able to modify the plans and recommendations for the patient when, as a result of listening to the interview, it became apparent that the type of work suggested was not in fact suitable or readily available.

As a result of early experience in the working of the scheme a form was introduced for all in-patients in which sections were to be filled in by the doctor, the occupational therapist, and the remedial gymnast, the aim being to collect all possible information concerning the patient's employability. The information available for out-patients was necessarily much more scanty.

## Results

A follow-up inquiry was made not less than six months after the conference, chiefly by means of a questionary filled up by the patients. This paper is based on an analysis of the patients dealt with in this way who were first seen by the D.R.O. before Dec. 31, 1947.

*Table Showing Results of a Follow-up*

| Diagnosis | In Employment: Settled: Men | In Employment: Settled: Women | In Employment: Precarious: Men | In Employment: Precarious: Women | Unemployed: Men | Unemployed: Women | Untraceable: Men | Untraceable: Women | Total |
|---|---|---|---|---|---|---|---|---|---|
| Depression | 16 | 3 | 1 | 3 | 4 | 2 | 1 | 0 | 30 |
| Anxiety state | 9 | 2 | 4 | 2 | 3 | 2 | 1 | 0 | 23 |
| Hysteria | 4 | 0 | 4 | 0 | 1 | 3 | 0 | 1 | 13 |
| Obsessional state | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Psychopathic personality | 3 | 0 | 4 | 1 | 6 | 1 | 4 | 1 | 20 |
| Mania | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Schizophrenia | 7 | 3 | 3 | 0 | 7 | 4 | 0 | 1 | 25 |
| Organic states, including epilepsy | 2 | 1 | 0 | 0 | 3 | 2 | 0 | 1 | 9 |
| Total | 42 | 9 | 16 | 6 | 25 | 14 | 6 | 4 | 122 |
| Age: | | | | | | | | | |
| Under 20 | 5 | 0 | 2 | 0 | 5 | 3 | 0 | 1 | 16 |
| 20–30 | 20 | 5 | 4 | 1 | 7 | 4 | 5 | 2 | 48 |
| 30–40 | 6 | 2 | 4 | 4 | 7 | 3 | 1 | 0 | 27 |
| 40–50 | 6 | 1 | 6 | 1 | 4 | 3 | 0 | 0 | 21 |
| Over 50 | 5 | 1 | 0 | 0 | 2 | 1 | 0 | 1 | 10 |
| In-patient ? | | | | | | | | | |
| Yes | 35 | 7 | 10 | 4 | 15 | 9 | 4 | 3 | 87 |
| No | 7 | 2 | 6 | 2 | 10 | 5 | 2 | 1 | 35 |
| Civil state: | | | | | | | | | |
| Married | 19 | 2 | 8 | 1 | 8 | 3 | 3 | 0 | 44 |
| Single | 23 | 7 | 8 | 5 | 17 | 10 | 3 | 4 | 77 |
| Widowed (women) | | 0 | | 0 | | 1 | | 0 | 1 |
| Occupational therapist's report: | | | | | | | | | |
| Favourable | 21 | 3 | 4 | 1 | 3 | 2 | 0 | 0 | 34 |
| Doubtful | 4 | 0 | 3 | 0 | 1 | 0 | 0 | 0 | 8 |
| Poor | 2 | 1 | 1 | 1 | 6 | 1 | 0 | 1 | 13 |
| Previous work record: | | | | | | | | | |
| Good | 28 | 7 | 6 | 2 | 7 | 6 | 1 | 0 | 57 |
| Fair | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 1 | 7 |
| Poor | 11 | 1 | 7 | 3 | 18 | 6 | 3 | 1 | 50 |
| Recommendations of hospital: | | | | | | | | | |
| Carried out | 36 | 7 | 12 | 3 | 7 | 6 | | | 71 |
| Not carried out | 6 | 1 | 4 | 3 | 16 | 8 | | | 38 |
| No specific rec. made | 0 | 1 | 0 | 0 | 2 | 0 | | | 3 |

Of the men 31 had changed their occupations and 27 were doing the same type of work as they did before their breakdown; 23 of the former were well settled and eight were in precarious work, and 19 of the latter were well settled and eight precariously employed. There is no evidence, therefore, that change of occupation in itself has any particularly harmful or beneficial effect. Two reverted to their previous occupation after attempts had been made to settle them in something thought to be more suitable. Eight were well settled in work of a type inferior to that they had undertaken before their illness. Ten were tradesmen and artisans, seven clerical and shop workers, 12 outdoor agricultural workers, drivers, etc., 18 labourers and unskilled workers, four were in training, and seven were following miscellaneous occupations. There were eight

patients of subnormal intelligence: three of these were in settled employment, three were in precarious employment, and two were unemployed. Of the 25 unemployed men 12 had had no work since they had been seen at the conference, whereas 13 had had some. Thirteen had had two or more jobs, but five of these were now regarded as well settled, while only three were unemployed.

Of the 14 women unemployed nine had had some work and five no work at all. Of those in employment, of the six women with depression three had clerical jobs, two shop-assistant jobs, and one was in domestic service; of those with anxiety state three had clerical jobs and one was in domestic service; the three schizophrenics were working in clerical jobs; the patient with organic disease was working as a domestic servant; and the psychopath was undergoing training for clerical work. The results were worse than in the men perhaps because women are not subjected to the same degree of economic pressure and find a position of dependence more acceptable socially.

## Discussion

The diagnosis of psychopathic personality seems to carry an unfavourable occupational prognosis, as one would expect considering the implications of erratic and antisocial behaviour that it usually conveys, but the numbers are too small for the results to be statistically valid.

Age appeared to have surprisingly little effect. Examination of the age–diagnosis distribution showed little relation between them, the diagnoses being scattered diffusely through the age groups.

The relative lack of success with those who had merely attended the out-patient department compared with the ex-in-patients is probably due more to the high proportion of mild chronic cases which they contain—the more acute cases of favourable prognosis usually being admitted to the wards—than to any other factor, although they undoubtedly receive on the average less attention than the in-patients and information about them is less complete.

Failure to carry out the recommendations of the hospital was usually due to circumstances beyond the patient's or the D.R.O.'s control, but it was occasionally due to the patient's change of mind. Housing shortage is one of the chief factors limiting mobility and consequently choice of work at the present time, and one finds in practice that many patients have in fact only one or two possibilities to consider. The results are strikingly better in the cases where the recommendations of the hospital were carried out, but caution must be exercised in interpreting these figures as showing what could be achieved if a greater choice of jobs were available. A defect of the patient, such as difficulty in the interview with a prospective employer, might prevent both the carrying out of the hospital's recommendations and the effective settlement of the patient anywhere.

The 17 patients who never succeeded in getting any work necessarily fell into the "recommendations not carried out" group, but a considerable proportion of them were unemployable by ordinary standards. The small group who did well in spite of rejecting the advice given to them—for example, the man who was told that he should take up training in agricultural work but found himself a clerical job, and the telephone engineer who was told that his job was too difficult for him but nevertheless persisted in it—form a useful corrective to dogmatic attitudes. Nevertheless the figures suggest that a widened range of choice would substantially increase the chances of successful settlement.

An occupational therapist's report was available on 55 patients; the proportion of these who were at work was slightly higher than for the whole group because of the refusal of some of the most difficult patients to do occupational therapy. Nearly three-quarters of those who were given favourable reports were in settled enployment and two-thirds of those who were given poor reports were totally unemployed. It seems that the opinion of the occupational therapist affords considerable help in assessing the patient's employability in ordinary life.

The previous work records were classed as good, fair, and poor according to the amount of unemployment, the length of time that jobs were held, and the degree of success attained; in some cases information was not adequate for classification. They were, of course, prognostically significant, but the comparatively high proportion of those with poor records who achieved settled jobs is noteworthy.

In view of the general impression of the value of personal contact it would appear worth while to compare the results in the group of patients who were dealt with at the Camberwell Exchange, and so by the D.R.O.s who had attended the hospital conference, with those who were settled by other exchanges. Of the 11 male Camberwell patients eight were in satisfactory employment, one had had some work, one had been totally unemployed, and one was untraceable. Of the seven female Camberwell patients four were in satisfactory employment, one had had some work, one had had none at all, and one was untraceable. These figures show a statistically significant superiority in the results of the Camberwell group, which suggests that where placement can be made by the D.R.O. who has been to the conference it is on the whole more successful.

The general impression is that success or failure in any one case depends on the complex interaction of a wide variety of factors—social attitudes, family circumstances, environmental accidents, and personality qualities inherent in the patient—so that the finding of a method of approach to resettlement in employment applicable to the group as a whole is likely to prove extremely difficult. Although the patients remain stubbornly individual in the problems which they present, they cannot, of course, avoid being affected by processes influencing the general level of employment in the country. As the demand for labour rises it becomes progressively easier for them to obtain and keep jobs, and the removal of brakes on mobility, such as the provision of adequate housing, would help them as well as the healthy workers. This is a preliminary inquiry aimed at defining the problems and not at discovering a solution for them; the results may prove of some interest to those planning larger undertakings.

## Summary

A follow-up of 122 psychiatric patients placed on the Disabled Persons Register was made—73 were employed, 39 were unemployed, and 10 were untraceable. Of those in employment 51 appeared well settled in their jobs and 22 to be holding on to them precariously. Seventeen had had no work at all since being put on the register. Groups separated on the grounds of age, diagnosis, and civil state showed no significant differences, and even those patients of dull intelligence seemed as likely to keep a job as the brighter ones, although the numbers were so small that there might well be differences which a more extended inquiry would make evident. The previous work record and the occupational therapist's report while the patient was in hospital had prognostic value with regard to employment. It seems that the fullest advantage of the hospital conference method is obtained when the D.R.O. who attends the conference is the one responsible for the actual resettlement of the patient.

Our thanks are due to the D.R.O.s of Camberwell Exchange, who have co-operated with us enthusiastically and offered us every help and courtesy; and to Mr. Lubin, of the Psychological Department of the Institute of Psychiatry, for a statistical examination of our figures.

# PHYTO-PHOTO-DERMATITIS

BY

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Phyto-photo-dermatitis is a bullous eruption appearing on parts of the body which have been in contact with certain plants and simultaneously exposed to sunlight some 48 hours previously. Until recently (Roxburgh, 1947) standard text-books on skin diseases have paid little attention to this relatively common dermatitis. We owe the term phyto-photo-dermatitis to Klaber (1942). It is an adequate name which describes the aetiology of an eruption caused by a variety of plants. The term phyto-photo-dermatitis includes dermatitis bullosa striata pratensis (Oppenheim), Oppenheim's disease, meadow dermatitis, parsnip dermatitis, and berloque dermatitis.

The incident described below is recorded because of the large number of cases occurring within a few days, and because of a surprising lack of familiarity with the condition shown by many practitioners and the patients and their relatives.

The disease is by no means unknown to country folk. However, many inquiries made over the past eight years in Wiltshire, Somersetshire, Devonshire, and Lincolnshire revealed that none of the people with whom discussions have been held realized the true causes of the dermatitis. In the country, children running bare-legged through long grass in the summer months are quite often affected, but as the parents are familiar with the signs and symptoms the doctor is seldom consulted. It is not common for adults to be afflicted in such circumstances. Whether this can be attributed to the style of clothing or whether some degree of desensitization occurs during childhood has not been ascertained. Another point of interest is that it seems to be more prevalent in districts where heath-land and moors exist.

Oppenheim (1926) gave the first clear and detailed description of the condition, which had affected a number of his patients sunbathing on the grass in the Viennese suburb of Ottakring. Two years later he realized the significance of contact with plants in the production of dermatitis, when he thought that siliceous compounds in the plants might be the important factor (Oppenheim and Fessler, 1928). From this time various plants in many different countries have been incriminated. Although Philadelphy (1931) seemed to have recognized that sunlight might be a factor in the production of the dermatitis, it was not until Kitchevatz (1934a), in France, carried out experiments with ultra-violet rays that the dermatitis was known to be due to a photosensitization arising from contact with the juices of certain plants. He later (1936b) ingeniously utilized the advent of an eclipse of the sun to strengthen his arguments.

## Botanical Aspects

As further cases are published it is possible that many more plants possessing photodynamic properties will be recorded, but the following list of those involved in phyto-photo-dermatitis may be of value. References are also given as an aid to more detailed study.

The wild parsnip, *Pastinaca sativa*, appears to have been the plant first, and most commonly, associated with photosensitivity (Stowers, 1897; Hartmann and Briel, 1927; Heye, 1929; Hirschberger and Fuchs, 1936; McKinlay, 1938; Jensen and Hansen, 1939; Klaber, 1942). Cultivated parsnips have been reported by Whittle, Hellier, and Lee (1946) as being responsible for the dermatitis in some instances. Other plants accused are yarrow or milfoil, *Achillea millefolium* (Philadelphy, 1928; Gans, 1929; Spillman and Weiss, 1931); angelica, *Angelica sylvestris* (Bogdanovitch *et al.*, 1935), buttercup, *Ranunculus bulbosus*, and mustard, *Sinapis arvensis* (Spillman and Weiss, 1931); bindweed, *Convolvulus arvensis* (Klaber, 1942); common rue, *Ruta graveolens* (Oppenheim, 1932); the allied fraxinella, *Dictamnus fraxinella* (Baronovysky, 1929), and gas-plant, *D. albus* (Cummer and Dexter, 1937); cow-parsnip, *Heracleum sphondylium*, and its cultivated relatives *H. giganteum* (Straton, 1912) and *H. mantegazzianum* (Miescher and Burckhardt, 1937; Kuske, 1938); figs, *Ficus carica* (Straton, 1912; Legge, 1921; Kitchevatz, 1934c; Behcet *et al.*, 1939; Klaber, 1942); meadow grass, not identified specifically (Oppenheim, 1926; Hartmann and Briel, 1927; Corsi, 1933; Corson, 1935; Kitchevatz, 1936a); Persian or Tahitian lime (Sams, 1941); agrimony, *Agrimonia eupatoria* (O'Donovan, 1942).

It will be noticed that, although a considerable number of species are involved, they belong to a few families only: Umbelliferae (wild parsnip, cultivated parsnip, cow-parsnip, yarrow, angelica); Rutaceae (common rue, gas-plant, limes); Rosaceae (agrimony); Moraceae (figs); Ranunculaceae (buttercup); Cruciferae (mustard). The majority of these plants belong to the families Umbelliferae and Rutaceae.

## Geographical Distribution

Phyto-photo-dermatitis has a wide geographical distribution. Following on Oppenheim's first communication in Austria in 1926, cases were soon reported from Germany and France. In the latter country Jacowski collected seven cases from the airfield at Etampes and its neighbourhood. Five were French airmen who, between June 23 and 28, 1935, sunbathed or walked bare-legged in the grass. Two further cases were children belonging to French Air Force families living on the same station, exposed to the sunlight and grass at the same time. A number of other people so exposed were not affected (Jausion and Jacowski, 1936b). Cases were also reported from Italy, Yugoslavia, Russia, Switzerland, Denmark, Spain, and the United States of America.

From the time of Stowers (1897) no cases were recorded in Great Britain until Straton (1912) reported a case in Wiltshire following contact with figs. Corsi (1933) described the typical skin eruption in a student who indulged in sun-bathing after a swim near Tunbridge Wells. McKinlay (1938) described several similar cases from Salisbury Plain, where, later, O'Donovan (1942) reported some dozen more. Until O'Donovan's cases occurred in the hot summer of 1940 no importance had been attached to the disease. Public interest at this time had been aroused to the dangers of noxious war gases, and the appearance of blisters on the skins of unsuspecting people—Service and civilian—gave concern to the local public authorities, who at first had the impression that the victims had come into contact with mustard gas. At that time I attended eight cases amongst Army personnel who were doing airfield guard duties in the heart of the Plain. These soldiers were undergoing intensive field training, stripped to the waist in the hot sunshine. They had thus come into contact with patches of cow-parsnip, which they used for concealment and cover. Within forty-eight hours the affected men's chests and bellies were covered with the characteristic striate, criss-cross weals and blisters. Whittle *et al.*, quoted above, have also mentioned some cases occurring in France in 1944 among A.T.S. girls peeling cultivated parsnips in bright sunshine. Klaber (1942) recorded two cases due to contact with wild parsnip in 1940, and another in 1941 in which bindweed appeared to be involved.

## Biochemical and Biophysical Aspects

The nature of the photosensitizing substance in these plants which causes the dermatitis has not yet been fully elucidated. Kitchevatz (1936a) showed that it is not chlorophyll, but that alcoholic extracts from figs had this property. Jausion and Jacowski (1936b) suggested that sweating as well as exposure to strong sunlight was required before

erythema and vesiculation followed an application of watery extract of grass. Obvious sweating was not found to be essential in the experiments detailed below. Following the production of bullae some forty-eight hours after the application of the undiluted juices of rue, wild parsnip, and figs in bright sunlight, Kuske (1938) began to investigate the photodynamic properties of a group of ketonic compounds known as furo-cumarins. Chemically pure compounds were obtained from oil of bergamot to produce bergapten, oxy-peucedoin from masterwort (*Peucedanum ostruthium*), and ficusin from figs, while others have been isolated from a number of essential oils as well as from dill and parsley. All these substances when applied to the skin in sunlight produced bullae or erythema after forty-eight hours, followed by prolonged pigmentation. It would be interesting if these complex ketones could be isolated from all the plants producing phyto-photo-dermatitis, but that is beyond the resources of most clinical workers in this field.

Jensen and Hansen (1939) have elucidated the biophysical aspects of the problem in a series of carefully conducted experiments. They showed that the active range of the solar spectrum required to produce the dermatitis lies between 320 and 366 millimicrons in the long-wavelength end of the ultra-violet section, with a less active band between 264 and 280 millimicrons. These findings probably account for the incidence of the disease at the height of summer, when these rays are able to penetrate the atmosphere, and also explain the failure of a number of workers to reproduce the photodynamic effects with ordinary artificial ultra-violet rays. Jensen and Hansen further demonstrated that irradiation of alcoholic extracts of wild parsnip did not render the extract active of itself. Individual susceptibility to the plant was found to be unlikely in that all the subjects tested gave similar results.

## Present Series

The cases occurred at a Royal Air Force station in Lincolnshire during the summer of 1947. Two different squads, with forty airmen in each, were sent by their physical-training instructors on a twelve-mile race—the first on July 15 and the second on the 16th. The first mile or two was across fields and then over an assault course thickly overgrown with wild parsley (*Anthriscus sylvestris*) and yarrow, while the remainder of the run was along roads where an occasional patch of cow-parsnip was found in an immature stage of growth. The race on both days was held in brilliant sunshine, and the airmen ran in short trousers, many without vests or stockings. On the morning of the 17th an airman who had taken part in the first run reported sick, complaining of intense irritation and weals on the legs the previous evening, some thirty-six hours after exposure. By the morning large blisters had developed. During the next two days twenty-three more airmen were found to be suffering from the same symptoms with varying degrees of severity. At the same time four officers' children and seven children from the married airmen's quarters, some of whom had been reported as having contracted chicken-pox, were found to be suffering from minor degrees of phyto-photo-dermatitis. Subsequent inquiries from the parents elicited the information that three of these children had been diagnosed as suffering from varicella in the same month a year previously, and that the skin eruption was identical with that of the present outbreak.

The clinical features of this series of cases were a sudden onset of itching or burning in areas of the skin exposed to the plants and sunlight simultaneously twenty-four to forty-eight hours previously. Within six hours of the onset long linear weals with a bordering zone of erythema appeared, followed in a few hours by bullae. The bullae varied in size from dew-drops to large wrinkled blisters 5 in. (12.5 cm.) in diameter. The blisters were surrounded by an areola of bright-red erythema ½ in. (1.25 cm.) wide, merging imperceptibly into the surrounding skin. The smaller bullae tended to be strung along straight weals like necklaces on a cushion, while the larger ones were oval or linear in shape and 4 to 10 in. (10 to 25 cm.) long. The largest blister completely encircled the left lower leg, and had a length of 5 in. above the ankle and a depth of 3 in. (7.5 cm.) Seven ounces (200 ml.) of straw-coloured fluid were removed by aspiration. The same airman also had numerous weals and smaller blisters on both legs, extending half-way up the thighs, and on the chest and abdomen down to the waistline. A pattern of scarlet stripes and long blisters criss-crossing one another, or with a tendency for several adjacent ones to run in parallel lines, was the characteristic picture. The skin between the lesions and the parts not exposed appeared to be normal. There was no associated conjunctivitis or rhinorrhoea. Seven severe cases required treatment in hospital, but within ten days the largest blisters had healed. Minor cases did not seem to be troubled for more than two or three days. A deep-purple pigmentation remained at the site of the lesions for the several weeks it was possible to keep most of the victims under observation. Four cases still showed faint but easily discernible pigmentation, faded to a violet hue, six months later.

Patch-tests were carried out on two hospital patients and two unaffected volunteers. The flowers, leaves, and stalks of wild parsley, yarrow, and cow-parsnip were applied to the arms; control areas were protected from sunlight by adhesive plaster and test areas were exposed to the sunlight. Only the wild parsley exposed to sunlight gave positive results to the flowers, leaves, and stalks in all four subjects. Erythema appeared in twenty-four hours, followed by small vesicles in forty-eight to seventy-two hours. The patches were left on for six hours, and the subjects under observation spent most of that time in bright sunlight. For the remainder of the time under observation they remained covered. The tests were repeated on four more volunteers in much the same manner, but the flowers, leaves, and stalks were only rubbed on to the normal skin. All four gave much stronger positive results with wild parsley than did those in the previous test on exposure to sunlight. This time, in one person, cow-parsnip produced erythema in seventy-two hours, followed in a few days by desquamation and faint residual pigmentation. Aqueous and alcoholic extracts of the same plants were then painted on the arms of four subjects, one arm exposed to sunlight and the other covered. All four again produced erythema followed by slight vesiculation with both extracts of the wild parsley but not with other plants. One of the volunteers on to whose skin the plants had been rubbed still, after eight months, has pigmentation of the areas which gave positive results with wild parsley.

The results obtained from these patch-tests seem to confirm the observation made in the field that wild parsley was the offending plant in this series of cases. It would also appear that the photo-sensitizing substance is present in alcoholic and watery extracts. Support is given to Jensen and Hansen's suggestion that phyto-photo-dermatitis is not due to individual susceptibility to the particular plants giving rise to it. The fact that yarrow and cow-parsnip, both of which have been found by other workers to possess photodynamic properties, did not produce any result, or in the latter case produced only a weak one, is difficult to explain. It suggests that the same species of plants may possess photodynamic properties in one location and not in another, or that they possess these properties at a certain stage of maturity or at different periods of the summer. Further work is required to solve these problems.

## Differential Diagnosis and Treatment

Since the effects of noxious gas warfare have become more widely known phyto-photo-dermatitis has more than once given rise to the belief that the patients have come into contact with mustard gas. It is, however, easily distinguished by the absence of erythema in the axillae and groins, of conjunctivitis, or of respiratory and other systemic symptoms. The blisters of phyto-photo-dermatitis, though sometimes very large, are wrinkled like the folds of a slack tent and not tense and dome-shaped as with mustard gas.

Phyto-photo-dermatitis is sometimes confused with varicella, especially when children have one or two small bullae on the hands and legs. The characteristic mixture of fresh lesions, crusting, and healing vesicles of varicella is absent, while the distribution of phyto-photo-dermatitis is on the exposed parts only.

Treatment consisted of aseptic aspiration of the large blisters and the application of sedative lotions such as calamine or calamine and lead, which tend to dry up the lesions. Liniment of calamine or zinc cream is useful in the late stages to keep the skin soothed yet supple.


### Summary

Thirty-six cases of phyto-photo-dermatitis are recorded. A further eight cases are noted.

Wild parsley (*Anthriscus sylvestris*) was found to be the plant responsible for the outbreak. This was confirmed by patch-tests.

The history, the geographical distribution, and the biochemical and biophysical factors of the disease are briefly discussed, along with the species of plants indicated as causing it.

Differential diagnosis and treatment are also mentioned.


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**Addendum.**—Since this article was prepared for publication three more cases have occurred on the same Royal Air Force station. Three aircraft apprentices, lying with rolled-up shirt-sleeves on the grass watching athletics on May 19, 1948, in bright sunshine, developed typical vesicles on the forearms on May 21. Investigation has not been completed in these cases.

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# THE PROGNOSIS AND TREATMENT OF SPRUE IN INDIA

BY


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In a clinical survey of 600 cases of sprue during the last war it was noted that only 31% had reached complete remission of the disease before evacuation from India, and it was believed that the relapse rate in England was high. The object of this paper is to assess the prognosis and results of treatment in a further series of 62 cases treated by me in India in 1945–6 and followed up for a period of two years in England. Their fate may be representative of that of the 1,073 cases sent back to England between 1943 and 1946. The value of the methods of treatment used in these cases can now be judged in perspective; and since these cases are likely to be the last treated without folic acid they may provide a basis for assessing the results of folic acid or other treatment.

### Scheme of Treatment

Cases were treated on admission by diet alone or by diet with parenteral liver and other substances, according to the severity of the symptoms of relapse. Whenever possible, cases were treated by diet alone (Group 1). If diet failed and symptoms of relapse persisted, the patient was given for a preliminary period an "investigation diet," from which such therapeutic substances as liver were omitted (Group 2). With this diet the effect of parenteral liver, nicotinic acid, and riboflavin was assessed, particular attention being paid to clinical features such as weight, stools, and blood count, as well as to fat-balance, glucose tolerance, and, in 10 cases, nitrogen balance. Ten cases showed such severe signs of relapse that no preliminary control period was possible and parenteral therapy was begun immediately (Group 3).

This grouping demonstrated the value of dietetic treatment alone. Cases which responded satisfactorily were classified as mild sprue. Those which failed to respond to a trial of dietetic therapy, or were so ill on admission that it could not be considered, were given parenteral liver and classified as severe sprue. It was therefore justifiable to attribute any improvement that occurred in severe sprue as due to parenteral therapy and not to dietetic measures alone. At this stage various remedies were tried in order to obtain preliminary assessment of their potency and/or mode of action. It was intended to do further trials of apparently active substances alone under controlled conditions in an adequate number of cases, but this proved to be impracticable.

These observations form the basis of the brief remarks in this paper on the value of various therapeutic methods used. Further details may be found in the report on sprue submitted to G.H.Q. India (in press).

### Criteria of Progress

(*a*) *Short Term.*—Response to treatment was indicated by the appearance of the signs of the remission phase of the disease. These have been described in detail in a previous paper, in which it was emphasized that, besides gain in weight and cessation of diarrhoea, transient glossitis, desquamation of the skin, and increased abdominal distension almost constantly appeared. Steatorrhoea and abdominal distension were the last signs to disappear before completion of the remission phase. Thus the criteria for complete remission were (1) restoration of weight to within 10 lb. (4.5 kg.) of normal, (2) stools normal in number, colour, and fat content, (3) absence of abdominal distension, (4) ability to maintain Nos. 1–3 on a normal diet.

(*b*) *Long Term (after 2 Years).*—Details have been obtained from each patient after two years in England as to (1) complete fitness since return from India, (2) loss of time from work with symptoms suggestive of sprue or any other disease, and (3) necessity for hospital treatment with relapse. In the first group remission may be considered complete, and in the second partial; in the third treatment has failed. I am indebted to patients, doctors, and hospitals for details of cases which I have been unable to examine myself.

### Results of Dietetic Treatment

(*a*) *Short Term (3 Months).*—Fifty-two patients were treated initially with diet alone, by means of the Napier high protein–low fat sprue diets 3, 4, and 5. (See Table, (a).) The fat content was checked at intervals by analyses of milk, fish, and meat. Thirty-seven of the patients were evacuated to England after about three months' treatment, 23 of them in a state of complete remission and 14 in partial remission. The remaining 15 failed to respond to treatment. Of the 14 in partial remission six had persistent abdominal distension alone and four had steatorrhoea alone; the remainder had a combination of these and failed to regain weight. However, all were progressing well at the time of embarkation, a date not governed by medical considerations.

(*b*) *Long Term (2 Years).*—During two years 29 cases have been in complete remission, four have periodically developed symptoms keeping them from work, and four more have relapsed and returned to hospital. It is noteworthy that the 15 which failed to respond in the first instance were treated with parenteral liver as severe cases. The following summarizes these results :

| | Short Term (to 3 months) | Long Term (during 2 years) |
|---|---|---|
| Cases in complete remission | 23 (44·2%) | 29 (55·8%) |
| Cases in partial remission | 14 (26·9%) | 4 (7·7%) |
| Cases having relapse | 15 (28·9%) | 19 (15 + 4) (36·5%) |
| Total cases | 52 | 52 |

### Results of Parenteral Therapy

*Short Term (6 Months).*—This group of 25 cases comprised those previously mentioned who had failed to respond to dietetic treatment (15 cases), and those too ill on admission to be treated by diet alone (10 cases). All these cases were given investigation diets similar to the Napier sprue diets (see Table, (b)), but without foods with possible therapeutic value, such as liver, bananas, and vitamin concentrates. They received liver over long periods, and some were given trials of injections of nicotinic acid and riboflavin for a short time. Blood transfusion was successful in two cases in which response to liver therapy was not adequate. All these cases were treated for some six months before being evacuated from India. Of the 25 cases 10 were in complete remission, 13 in partial remission, and two failed to respond. All those in partial remission continued to have steatorrhoea and abdominal distension.

*Long Term (2 Years).*—During two years 14 have been in complete remission, one has had symptoms keeping him from work, and six have relapsed and received further treatment in hospital. Three cases have not been traced. Of the two evacuated in a state of relapse, one has been in complete remission since his return, and one has developed pulmonary tuberculosis, entering a sanatorium in June, 1947, where he has since died.

The following summarizes these results :

| | Short Term (6 months) | Long Term (during 2 years) |
|---|---|---|
| Cases in complete remission | 10 (40%) | 14 (56%) |
| Cases in partial remission | 13 (52%) | 1 (4%) |
| Cases having relapse | 2 (8%) | 6 (24%) |
| Died of pulmonary tuberculosis | — | 1 |
| Cases untraced | — | 3 |
| Total | 25 | 25 |

Of 62 cases of sprue, therefore, 43 (69.4%) have remained well for two years in England, and a further five (8%) have had mild gastro-intestinal symptoms. Ten (16.1%) cases have relapsed since leaving hospital in India. Nine of these relapsed on the ship during evacuation to England under conditions of crowding, excessive heat, and dietetic insult. Five have suffered further relapses during their second year in England.

| Diet | Calories | C | P | F | Vit. A (I.U.) | Thiamine (mg.) | Riboflavin (mg.) | Nicotinic Acid (mg.) | Ascorbic Acid (mg.) | |
|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 1,513 | 159 | 118 | 45 | 14,000 | 1·2 | 6·0 | 18·3 | 31 | (a) Diets used in routine treatment (include liver 4 oz. orally daily) |
| 4 | 2,109 | 233 | 139 | 69 | 16,000 | 1·4 | 6·3 | 25·5 | 31 | |
| 5 | 2,584 | 308 | 149 | 84 | 17,000 | 1·6 | 6·3 | 26·9 | 43 | |
| Investigation | | | | | | | | | | |
| I | 2,037 | 215 | 139 | 69 | 1,900 | 1·1 | 3·2 | 9·4 | 28 | (b) Investigation diets used in therapeutic trials |
| II | 2,620 | 290 | 149 | 96 | 3,500 | 1·3 | 3·2 | 10·8 | 40 | |

(a) Napier's Diets 3, 4, and 5, as used in the dietetic treatment.
(b) Investigation Diets. These modified Napier Diets were used for patients on parenteral therapy.

### Effective Factors in Treatment

Much of the confusion regarding the treatment of sprue can be avoided by appreciation of the cyclic evolution of the disease. The characteristics of the relapse and remission phases of the disease have been previously described and will not be further discussed, but, as an example, the recognition that a glossitis usually lasting 2–3 weeks occurs early in remission has obvious bearing on assessing the efficacy of a therapeutic substance. Liver therapy is dramatic, and may be life-saving when given in relapse, but has no detectable action when remission has developed. All therapeutic effects must therefore be assessed according to the point in the disease which has been reached at the time of treatment. A patient in relapse will always pass through remission at a variable rate before reaching complete symptomatic cure. The therapeutic factors briefly noted below will be assessed from this aspect.

*Diet (Napier's sprue diets 1 to 5).*—Of 52 cases treated by diet alone, 37 (71%) underwent remission, but only 23 (44%) completed this phase in three months. Further cases recovered later, however, and 29 (56%) have remained well for two years in England. The effective factors in the diet are difficult to assess. Fifteen cases which relapsed or failed to improve on diet were deprived of liver, bananas, and vitamin extracts for periods up to 12 days as a preliminary to liver therapy, without any deterioration in their condition in this time.

*Protein.*—In 10 cases undergoing remission during liver therapy a positive nitrogen balance was found by Dr. R. C. Clutton. In one of these a negative nitrogen balance had

been present during relapse, due to increased faecal nitrogen. In spite of dehydration, several cases in relapse exhibited low plasma proteins, which rose during remission. These facts may indicate the value of a high protein diet in both phases of the disease.

*Fat.*—During relapse, in cases where fat balance was possible, absorption of fat still remained in the region of 50%. There was no evidence of fat excretion during remission in two cases on a fat-free diet. Raising the fat intake from 69 g. to 96 g. daily, when justified by the clinical state, did not alter the percentage absorbed.

*Carbohydrate.*—A glucose-tolerance curve is doubtful evidence of carbohydrate absorption in a disease which may involve liver function. Such curves, however, have been flat in relapse and often remained so for at least the first two weeks of remission, later rising to normal. Two cases since returned to England have had glycosuria, and one, since recovered, has been treated for diabetes for some months. This case had typical flat glucose-tolerance curves in India.

*Vitamins of the B Group.*—Nicotinic acid (150 mg. daily) and riboflavin (5 mg. daily), added to parenteral liver, produced no change in fat absorption or the clinical state in five cases, which were static in early remission. An impression that yeast extract slightly accelerated the already slowly increasing fat absorption needs confirmation.

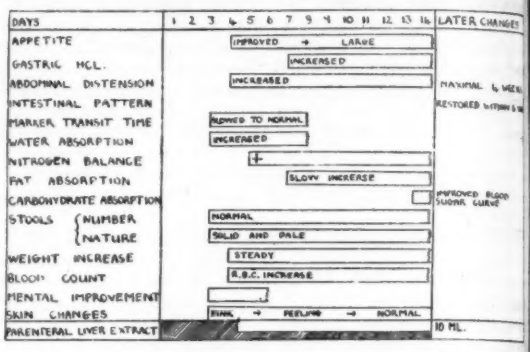
*Salt.*—In one case in severe relapse the effect of 10–15 g. of sodium chloride daily by mouth was tried for ten days. During this time fluid stools rose from three to nine a day, weight dropped from 88 to 86 lb. (39.9 to 39 kg.) (normal weight 156 lb. (70.8 kg.)), anorexia increased, weakness became extreme, and there was vomiting. The blood pressure rose from 100/70 to 105/75 mm. Hg. Serum sodium rose from 258 mg. per 100 ml. to 310 mg. per 100 ml., the plasma volume rising from 2.1 to 2.5 litres. This patient responded well to subsequent liver therapy. The serum sodium changes well illustrate how improvement may be found in one facet of the case in the presence of gross clinical deterioration.

*Sulphaguanidine.*—This drug, given as for bacillary dysentery, improved the diarrhoea of relapse in sprue, often within 24 hours. The danger of dehydration was thus rapidly overcome, an invaluable advantage during the period of four days needed for liver to take effect. Sulphaguanidine was only partially effective alone, and diarrhoea returned when it was stopped. It did not produce remission of symptoms and its usefulness lay solely in controlling diarrhoea until liver became effective.

## Liver Therapy

Although it has been known for some 20 years that parenteral liver is effective in sprue, its mode of action has never been clear. It has been presumed to be analogous to its effect in pernicious anaemia. As the haemopoietic action of liver was found to be delayed in these cases an attempt was made to ascertain the reason for its undoubted efficacy. The liver preparation used was a crude extract of Indian manufacture, and a sample assayed in England was reported as equivalent to a standard proprietary preparation as regards haemopoietic activity. Dosage used was 10 ml. daily for four days intramuscularly, followed in most cases by a further 4 ml. daily for some weeks.

The effects of liver depend on the phase of the sprue cycle during which it is given. It is active and beneficial in relapse but affords little benefit, if any, to a patient in remission. This is confirmed in the present group of cases by the fact that 13 of 25 patients were still in partial remission after some six months' treatment, during which liver was given over long periods. The more marked the relapse syndrome the more effective was liver therapy: its action was not proportional to the severity of the anaemia. T effects of liver and the times of their occurrence are sho in the Chart. There was a latent period of 3–4 days; th




glossitis, if present, disappeared rapidly, whether *post* o *propter hoc* is not clear. Mental improvement was ear and marked. Skin pallor changed to a warm flush an desquamation appeared at the end of about one week. Th appetite improved, and became large. Gastric hydrochlor acid increased. Highly acid resting juice with hyperchlo hydric curves—never found in relapse—were commo Abdominal distension increased for 3–4 weeks. After s weeks' liver therapy the intestinal pattern reappeared o barium meal in one case in which it had been absent durin relapse. In four other cases showing good response to live it was also normal. Transit time of a marker through th gut was prolonged.

Stools, though pale, became normal in number and co sistency within 3–7 days. This diminished loss of wate in the stools coincided with the beginning of gain in weigh In one case nitrogen balance became positive within week of starting liver therapy. Fat absorption, apa from initial improvement with the cessation of diarrhoe increased only slightly. The part that liver played in th is doubtful. Blood sugar curves improved inconstant after two weeks, but it seems doubtful if this can b attributed to increased carbohydrate absorption alone.

Haematological changes have been described in a pre vious paper. Reticulocytosis was slight (not above 3%) but the red cell count slowly rose over a period of week with steady diminution in the mean corpuscular volum to normal. It was remarkable how the blood count an the weight of the patient approached normal value together. On two occasions liver failed to produce th effects described, which were, however, initiated by subsequent blood transfusion.

## Conclusions

In these cases the action of liver manifested itself on the gastro-intestinal tract from tongue to colon, producing evi- dence of increased absorption of water and water-soluble substances. No such marked effect was seen on fat absorp- tion. Haemopoietic response was slow and unlike that produced in pernicious anaemia. The effect of liver was in short, to reproduce with remarkable accuracy the syn- drome of remission which occurred in the mild cases on diet alone. Such observations supply strong *prima facie* evidence of the action of an intestinal factor in the crude liver extract used. Should such action be due to folic acid this substance will be shown to produce a comparable therapeutic action in cases of sprue in relapse.

## Summary

The results of treatment are described in 62 cases of sprue in India, later followed for two years in England. Complete

remission following dietetic and/or parenteral liver therapy occurred in 69.4% of these cases and definite relapse in 16.1%, nearly all of whom first relapsed during transit to England.

A brief review of the effective factors of treatment is given and the action of parenteral liver therapy analysed.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# Medical Memoranda

## A Case of Thrombophlebitis Migrans

The following case report may be of interest because it draws attention to the association of thrombophlebitis migrans with neoplasm, and because of an unusual event simulating an arterial block which occurred late in the illness.

CASE REPORT

A married shorthand-typist aged 25 was admitted to the hospital on April 16, 1948, with a three-weeks history of pain in the right side of the chest, an irritating dry cough, and increasing dyspnoea. In the past she had had bronchitis.

On examination she was febrile—100° F. (37.8° C.)—and was found to have a right pleural effusion with displacement of the mediastinum to the left. There was no clubbing of the fingers or evident enlargement of glands. A blood count showed: haemoglobin, 14.2 g. (96%); white cells, 12,300 (polymorphs 77%, lymphocytes 15%). The erythrocyte sedimentation rate was 6 mm. in one hour. The sputum showed mixed organisms, and $\beta$ haemolytic streptococci in culture. Tubercle bacilli were not seen. An *x*-ray film confirmed the presence of fluid but was otherwise unhelpful. Pleural tap produced clear fluid, mainly lymphocytic, with some endothelial cells and an occasional polymorph. Culture was sterile. A provisional diagnosis of tuberculous effusion was made.

Owing to increasing dyspnoea, fluid was withdrawn from the chest on April 26 and 29 and May 4, 7, 12, and 14, always from the right side, although the effusion was bilateral by May 14. The specimen taken that day contained a fair number of red cells and 15% of endothelial cells.

On April 22 the patient developed pain in the right calf, thrombosis of the saphenous and femoral veins becoming complete over the next four days. Then thrombosis was detected in the left calf, and two days later there was swelling of the right arm, with pain over the right side of the chest, and haemoptysis, followed the next day by thrombosis in the left antecubital fossa. In view of the migrating form of the thrombosis a neoplasm in the chest was considered likely, but could not be demonstrated.

During the next week there was considerable improvement in the swelling of the legs; but a week later thrombosis of the right external jugular veins occurred, and after another week thrombosis of the innominate vein with dilatation of the veins over the front and back of the upper part of the chest.

On May 18 she complained of pain in the right hand, which was found to be blue and cold from the lower third of the forearm. No arterial pulsation could be felt with certainty below the axilla. There were no objective sensory changes over the affected hand or wrist. An arterial block was diagnosed, but embolectomy was out of the question, and the patient died some seven hours later.

*Necropsy.*—The principal findings were: (1) Bilateral pleural effusions and pericardial effusion. (2) A primary growth 1 cm. in diameter with a necrotic centre was growing from a minor bronchus of the right middle lobe of the lung. It was anaplastic, being partly spheroidal and partly squamous. (3) Multiple small nodules of growth were found in the parietal pleura and in the visceral surface of the pericardium. (4) Metastases were also found in the liver, both suprarenals, the left ovary, the head of the left femur, the lower deep cervical, paratracheal, mediastinal, and para-aortic glands, and the lymphatics of the pericardium and myocardium. (5) The superficial veins of the thorax were thrombosed, as were the jugular, the innominate, the vena azygos, and the main branches of the pulmonary veins. There was a large ante-mortem thrombus protruding from the superior vena cava into the right auricle of the heart. (6) Ante-mortem thrombus was also found in the axillary, brachial, and antecubital veins on the left, and also for about 1 in. (2.5 cm.) in the left femoral vein beneath the inguinal ligament. (7) The left axillary-brachial-radial artery was patent throughout its entire length and there was no evidence of embolus in it. (8) There was a very small patent foramen ovale. (The skull was not opened, and other veins were not observed).

DISCUSSION

Two points of minor interest are: the youth of the patient—she was only 25—and the silent onset and rapid dissemination of the growth; for, apart from a recent bronchitis, from which she had made a complete recovery with a clear *x*-ray picture, she had been well.

The likelihood of a bronchial carcinoma being the primary cause of the pleural effusion was suggested by the onset of thrombophlebitis migrans, and was of course confirmed at necropsy.

Finally there was the occurrence of what appeared to be an arterial block in the left brachial artery, as evidenced by a cold, blue, painful hand and wrist, with a vague line of demarcation and absent arterial pulsation. It was debated at the time whether the block was due to an embolus from the lung or through a patent foramen, or whether it was due to an extension of the infected process to the artery wall from the neighbouring thrombosed vein. However, at necropsy no obstruction to the artery was demonstrable, nor could anything be found to account for this terminal episode.


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## Otitis Externa Granulosa

The presence of granulations within the external auditory meatus is usually regarded as indicative of chronic suppurative otitis media, and this disease is in fact the commonest cause of their formation. It seems less well known that such granulations may be found in the presence of an intact drumhead and normal middle ear.

Clark (1946) described a granulomatous type of purulent otitis externa which he had seen when in charge of a British Army E.N.T. centre in India. He reported "a sessile plaque attached to the outer surface of the drumhead itself, or small pedunculated masses arising from the meatal walls." Moffett (1943), also from India, described and illustrated cases of "granulating myringitis," but he emphasized that in this condition no diffuse external ear inflammation was present. He did, however, state that "granulations in the external auditory meatus associated with various types of otitis externa are by no means uncommon."

While Command otologist for Austria (and for part of the time for North Italy as well) over a 12-months period I observed 13 cases of otitis externa granulosa. During the same period I saw 118 cases of otitis externa *without* granulations and 82 cases of chronic otitis media. (Cases of chronic otitis media with otitis externa *secondary* to the middle-ear discharge have been recorded only under chronic otitis media. Cases of furunculosis occurring *without* a pre-existing otitis externa have been excluded. Cases of otitis externa confined to the pinna were often dealt with by the dermatologist and have also been excluded. The term "chronic otitis media" has been used comprehensively to include long-standing chronic suppurative otitis media and cases of "old dry perforations" that had become reinfected.)

Most of my cases, in all three groups, were seen during the hot weather, and an association with swimming generally seemed to be aetiologically significant. The cases with otitis externa granulosa were usually those in which the cutaneous inflammation was especially severe or neglected and in which there was a foul-smelling purulent discharge. Such a case was very likely to be diagnosed and treated as C.S.O.M. by the unwary.

The granulations in my cases were more often of the pedunculated type, arising from any part of the deep meatus and only in the minority of cases having attachment to the drumhead. Three of my 13 cases were associated with a meatal furuncle. No cases of Moffett's "granulating myringitis" were seen.

The differential diagnosis from chronic otitis media was made by cleaning with wool mops (using olive or arachis oil) and the gentle removal of granulations with aural crocodile forceps. One could then see (though perhaps not till the second or third treatment) an intact drumhead with normal landmarks. The externa cases responded to cleansing much quicker than cases

of chronic otitis media with granulations. Another point was that the odour of the pus in some cases early raised a suspicion that one was dealing with an entirely external otitis. Also the transmitted pulsation often seen on observing the pus coming from a middle ear is absent in a purely cutaneous suppuration. The presence of mucus in the discharge sometimes indicated that there was a middle-ear infection before the perforation could be seen.

A variety of C.S.O.M. that one must be very careful not to confuse with otitis externa granulosa is that with granulations protruding from an attic perforation or from a meatal fistula. One can diagnose the latter by noting that the discharge comes from a fistula or attic perforation on using Siegle's speculum. Gentle use of a probe will confirm this.

Much has been written on the subject of treatment of otitis externa, and I do not intend to enter into details. In my cases I became convinced that by far the most important thing was gentle but thorough daily cleansing of the meatus. But granulations, when present, were removed with crocodile forceps, and occasionally use was made of a silver nitrate bead fused on to a probe. This alone rapidly cured most cases.

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NOTE.—Since the submission of this paper Johnston (1948) has written an excellent article on ear conditions, including otitis externa granulosa.

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## Pre-pubertal Gonococcal Peritonitis

Peritonitis and salpingitis are rare complications of gonorrhoeal infection in female children (Bidwell, 1904; Hamilton, 1910; Koplik, 1910; Fraser, 1923; McLachlan, 1947). Few case reports have been published (Comby, 1901; Dowd, 1902; Hunner and Harris, 1902; Bidwell, 1904; Carpenter, 1904; Welt-Kakels, 1904), and statistics regarding incidence are difficult to obtain, but most would agree with McLachlan (1948, personal communication) that there is peritoneal involvement in about 1%. The following is the report of a case in which unilateral tubal involvement following an untreated gonococcal vulvo-vaginitis of short duration simulated acute appendicitis so closely that laparotomy was indicated.

### CASE REPORT

A girl aged 7 was brought to the casualty department by her mother on April 27, 1948, with the complaints of vulval soreness which had begun twenty-four hours previously, abdominal pain of twelve hours' duration, and dysuria for three days. The mother had noticed that the child had a vaginal discharge at the time of complaining of dysuria; vomiting had occurred twice shortly before being brought to hospital. The bowels had been acting regularly. The mother denied having any symptoms, and stated that her husband was also healthy.

On examination the child appeared toxic. The face was flushed, the tongue furred and dry. The temperature was 101.8° F. (38.8° C.) and pulse rate 140. On abdominal examination, limitation of respiratory movement affecting the lower abdomen was seen and general abdominal pain complained of, but on palpation the maximum tenderness and rigidity were localized in the right iliac fossa. Inspection in the lithotomy position revealed a red, oedematous vulva, purulent vulvo-vaginal discharge, and redness of the vagina and urethral meatus. A film of the discharge showed pus cells and scanty Gram-negative intracellular diplococci morphologically indistinguishable from gonococci. Culture confirmed that this organism was *Neisseria gonorrhoeae*.

A diagnosis of acute peritonitis was made; but, as appendicitis could not be excluded because of the major localization of pain in the right iliac fossa and a rising pulse rate, further examination under general anaesthesia, and possible laparotomy, were advised.

Under nitrous-oxide–oxygen–ether anaesthesia no abnormality could be felt in the right iliac fossa. Examination of the cervix by means of a small Fergusson-type speculum showed marked injection of the vaginal portion but no obvious discharge from the cervical canal. This suggested appendicitis rather than the rarer gonococcal salpingitis as the cause of symptoms. The abdomen was therefore opened through a right paramedian incision. A small amount of turbid odourless free fluid was found in the pelvis. In the right iliac fossa the caecum and small bowel showed some patches of exudate and congestion. The right Fallopian tube was thickened and distended with purulent material, which was leaking from the fimbriated extremity. Bacteriological examination of this exudate showed numerous pus cells and typical Gram-negative diplococci but no growth was obtained on culture. The left tube and ovary were normal, as was the appendix, which was not removed. The wound was closed in layers without drainage after a suspension of penicillin solution (500,000 units in 10 ml. of normal saline) had been introduced into the peritoneal cavity.

Convalescence was uneventful after the institution of a course of penicillin–sulphamezathine therapy, the child being discharged on the fifteenth day with a well-healed wound and no genito-urinary symptoms. Repeated examinations during convalescence and subsequently have shown no clinical or bacteriological sign of relapse.

Both parents were examined for gonorrhoea, with negative results; the epidemiological aspects could not, however, be satisfactorily completed, as the child had been on holiday some distance from home and it was impossible to trace contacts. As no history of interference was elicited, the inference was "accidental infection."

### COMMENT

In the published reports the reason most often given for laparotomy has been the difficulty of accurate differentiation between acute appendicitis and salpingitis. Bloch *et al.* (1938) state that since Hatfield's case in 1886, 56 cases had been reported up to 1938, and in 20 of these laparotomy was performed because of incorrect or uncertain diagnosis. Notes (1938) added 16 cases of his own, in none of which did he perform laparotomy. Weill-Hallé *et al.* (1940) reported a further case treated successfully with sulphapyridine. A comprehensive summary of the condition is provided by Norris (1913) and by Maguire (1944), who stress the difficulty of excluding appendicitis as the cause of peritoneal signs and symptoms. The latter adds two cases, and mentions another of interest in which appendicitis was misdiagnosed as gonococcal peritonitis principally because of the presence of leucorrhoea, and treated conservatively for four days before the need for laparotomy became evident.

In the case reported by us the possibility of the symptoms being due to gonococcal salpingitis was fully realized. The history, the localization of the abdominal findings, and the lack of cervical discharge made it impossible to exclude appendicitis completely. A therapeutic test with penicillin was considered but, with a rising pulse rate, the delay of even a few hours which would have been prejudicial in a case of acute appendicitis seemed a contraindication to conservative treatment.

Our thanks are due to Dr. A. E. W. McLachlan for much helpful advice and encouragement, and to Mr. P. H. R. Ghey for permission to publish details of the case.

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The U.S. medicinal chemicals industry manufactured £50,420,000 worth of drugs and other medical products during 1947, according to a report just compiled by the Bureau of the Census of the U.S. Department of Commerce. This represents an increase of 860% over the output for 1939, when the last census was taken. This phenomenal growth is partly due to the discovery of penicillin and other antibiotics and the increased use of other medical products such as vitamins. The average number of workers in the industry for 1947 was 9,414 as compared with 1,802 in 1939, wages were 12 times larger than in 1939, and the total expenditure for new plant and equipment during the year totalled £3,375,000.—*B.U.P.*

# Reviews

## ESSAYS ON SOCIAL MEDICINE

*Measurements of the Public Health.* Essays on Social Medicine. By F. A. E. Crew, M.D., D.Sc., Ph.D., F.R.C.P.Ed., F.R.S. (Pp. 243; 57 figures. 18s.) Edinburgh and London: Oliver and Boyd. 1948.

Professor Crew follows the excellent plan of taking as the text for his book the data published by the Registrar-General for Scotland. He reproduces the more important tables, comments on their contents, points out how the vital statistics differ from those of other countries, and discusses their social and biological implications. For instance, the figures of multiple births lead the author to explain the difference between identical and fraternal twins and triplets, and that leads on to the question of Nature *versus* nurture. The chapter on the sex ratio opens with statistics of the ratio at birth and in the post-natal population, and common-sense remarks on the immediate causes are followed by a lucid account of the sex-determining mechanism. This leads to a brief study of the inheritance of haemophilia, and the chapter ends with a discussion of the usefulness of sex. No doubt one travels a long way from mere figures—thus, the statistics of divorce lead to observations on the origin of the family—but for readers with no passion for sums (perhaps a majority of medical students) it is surely the right method. It will persuade many that dull arithmetic can be both a foundation for and a means of testing very interesting social theories. It was the method of that great pioneer, John Graunt.

It may be a little ungracious to criticize the detail of an interesting book, but, as actuaries are often amused by lay misunderstanding of that overworked phrase "the expectation of life," it is necessary to say that the lower half of p. 15 is incorrect. The expectation of life at any age is *not* the "probable number of years" a person of that age may expect to live, and actuaries do *not* construct life tables for the primary purpose of computing expectations of life. The expectation of life at age $x$ is the sum of the lengths of life of all who died older than $x$, divided by the number who reached age $x$; that is, it is the arithmetic mean of the frequency distribution of lengths of life where $x$ is the origin of measurement. If, and only if, the frequency distribution were symmetrical, mean and mode (the tallest ordinate of the frequency curve) would coincide. The distribution of ages at death is very skew, and at different ages the mode is greater or less than the mean. For instance, at age 30 (E.L. No. 10, males) the expectation of life is 38.21; the mode of the curve of deaths is between age 74 and age 75, so the "probable" after-life time is somewhere between 44 and 45 years. But at age 75 the expectation is 6.43 years, and the "probable" after-life time is less than a year.

However, a reader will not come to this book to learn statistics, but to gratify curiosity as to what vital and medical statistics suggest to an inquiring mind, and his interest should be stimulated by it. On the whole, Professor Crew's outlook is optimistic—possibly over-optimistic. He does indeed warn the reader that great pestilences may arise again, but he has confidence in our defences. "The freedom from the epidemic diseases which the Scottish population now enjoys rests on the unremitting attention of the public health authorities and their medical staffs and upon the intelligent awareness of the general public concerning the nature of these diseases and the means that have been made available for their control." But there is always the possibility that "flu" may become influenza. Between 1848 and 1889 nobody in Great Britain bothered his head over influenza, and by 1914 the younger generation had forgotten or never knew the influenzas of 1890 and 1891. Young people now do not remember the autumn of 1918.

MAJOR GREENWOOD.

## THE STRUGGLE TO SURVIVE

*Reproduction and Survival.* By R. Christie Brown, F.R.C.S., F.R.C.O.G. (Pp. 108. 6s.) London: Edward Arnold. 1948.

The author believes that the statement that reproduction is a physiological and a healthy process requires amplification. Without wishing to stress the dangers of childbearing, he thinks it necessary at the present time, when the public is being taught that childbirth is simple and safe and should be more or less painless, to call a halt and review Nature's purpose in reproduction: to ensure survival of the race. In doing so Nature has no care for the parent. Numerous examples are cited in support of this view, from the mites that eat their mothers during hatching to the salmon that, after spawning, rapidly ages and dies, and the drone which, after fertilizing the queen, falls back to the earth dead, leaving most of his entrails attached to his mate. Nature, besides being ruthless, is on the whole stupid, favouring the survival of the physically strong and eliminating the weak. Medicine has different values, however, and recognizes that the physically weak are often mentally superior and therefore worth preserving.

While generally supporting this view—that Nature needs watching—the author makes a curious exception. He assumes, probably correctly, that the embryo elaborates its own hormones and is therefore dependent on itself for its intra-uterine survival. Although he administers hormones in early pregnancy to prevent miscarriage, he would withhold endocrine therapy after the eighteenth week, when elaboration of hormones by the corpus luteum ceases and the foetus has to rely on its own resources. He advances the interesting view that the stronger and healthier the foetus the more abundant the hormones produced in the placenta, and in consequence the more the mother suffers during her pregnancy; and, on the contrary, the less she suffers in pregnancy the less effective are the foetal hormones. But as the mother is then less prepared for labour—the cervix less softened, the pelvic joints less relaxed, and the uterine contractions less efficient—she loses in labour what she gains in pregnancy.

In the final chapter the philosopher becomes again the practical obstetrician who gives wise advice on how Nature's attempts to eradicate those she considers least fitted to survive may be frustrated. The work will appeal to those who want something different from the ordinary textbook. To others who are not interested in the arguments and speculations of the earlier chapters the last three will more than justify the small expenditure necessary to give it a place on their bookshelves.

F. J. BROWNE.

## ELEMENTARY ANAESTHESIA

*Elementary Anesthesia.* By W. N. Kemp, M.D., C.M. (Pp. 289; 100 figures. $5.00 or 27s. 6d.) Baltimore: The Williams and Wilkins Company. London: Baillière, Tindall and Cox. 1948.

This book gives a good picture of the modern transatlantic practice of anaesthesia and analgesia. It opens with a brief historical résumé, which is followed by an account of the physiological and pharmacological background to anaesthesia, and a description of the signs of narcosis. Premedication and modern techniques with general and local agents are well described, although no mention is made of refrigeration beyond a passing reference to ethyl chloride sprays. Curare is discussed adequately, but it is unfortunate that both "standard" and "high potency" solutions are referred to in "Squibb units" and not in milligrams. It should surely be possible by now for international agreement to be reached on such an important matter as the standardization of curare solutions.

It is perhaps inevitable that many British readers will not agree with some of Dr. Kemp's conclusions. He has, for example, a low opinion of trichlorethylene—"the only indication for the use of this agent is the total absence of other less toxic and more reliable general anaesthetic drugs such as ether, chloroform, cyclopropane, etc." Under anaesthesia for thyroid surgery the somewhat startling statement is made: "With the advent of propyl thiouracil, thyroidectomy will soon be a rare operation." This does not appear to be the present view of such American authorities as the staff of the Lahey Clinic. Dr. Kemp is a staunch supporter of the existence of "status lymphaticus" and devotes a whole chapter to the subject, including an account of some original work. He regards the cause of the condition as a temporary hypofunction of the adrenal cortex in a child already handicapped by inadequate thyroid function, the latter due to insufficiency of dietary iodine.

The binding, printing, paper, and illustrations are all first class, but there are many typographical errors, particularly in

proper names. For example, a casual reading showed that Henry Hill Hickman, Humphry Davy, von Liebig, Fourneau, R. R. Macintosh, R. Machray, and Joseph Priestley are all misspelt. This is a pity, as it tends to convey an impression of slovenliness which the book does not deserve.

C. LANGTON HEWER.

## ABDOMINAL HERNIA

*The Surgery of Abdominal Hernia.* By George B. Mair, M.D., F.R.F.P.S.G., F.R.C.S.Ed. (Pp. 408. 138 figures. £1 5s.) London: Edward Arnold. 1948.

We can recommend this book as a reasonable and well-documented consideration of present views on all types of abdominal hernia. The author is for the most part justifiably critical of many modern methods, but he shows considerable partiality for the method of repair by whole skin grafts—a method of which he was a pioneer in Britain. It is perhaps unwise to allow thirty pages in a small book to such a full description of a type of operation which yet has to prove its merit in the surgical world.

After a chapter of general observation we are instructed in the management of strangulated hernia, and then chapter by chapter the author describes the various types of hernia, including their complications and a full account of the best line of treatment. It is impossible in a short review to discuss the many debatable views expressed, but it is clear that he has made a conscientious and informed attempt to assess correctly the merits of the various operations. The author states (p. 20) that a cold abscess will not give an impulse on coughing. The reviewer well remembers every member of an intelligent Fellowship class diagnosing as a femoral hernia what was in reality a cold abscess simply because it gave a good impulse on coughing.

The book is of handy size, printed on good paper, well illustrated, and there is a good list of references at the end of each chapter. In the bibliography of diaphragmatic hernia we missed the most valuable contribution of Dunhill.

ZACHARY COPE.

## BACTERIOLOGY

*Zinsser's Textbook of Bacteriology.* Ninth edition. Revised by David T. Smith, M.D., Donald S. Martin, M.D., Norman F. Conant, Ph.D., Joseph W. Beard, M.D., Grant Taylor, M.D., Henry I. Kohn, Ph.D., M.D., and Mary A. Poston, M.A. (Pp. 992; illustrated. $10.) New York: Appleton-Century-Crofts, Inc. 1948.

This well-known textbook, first published in 1910, the work of Zinsser, together with Hiss and later Bayne-Jones, is now dedicated to its original authors and re-compiled by seven of the present staff of the Duke University School of Medicine. It has been extensively revised, and its illustration, lavish even by American standards, includes many beautiful photographs and much useful graphic and tabular matter, particularly with reference to the epidemiological and public health aspects of its subject. In scope and scale it is much more than an ordinary textbook, and the professional bacteriologist will find it a useful guide to the best current American practice. The section on fungi, often lacking or inadequate in other textbooks, is particularly full, and nearly a fifth of the whole book is devoted to rickettsiae and viruses. There is very little to criticize, but we may note that "reversed selective bacteriostasis" is a myth, that the pigment produced by *Bact. melaninogenicum* is not melanin, and that *B. subtilis*, as far as we know, has nothing to do with hay fever. There are very extensive lists of references and an appendix on methods: the table of contents occupies 30 pages and the index 40.

L. P. GARROD.

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*A Surgeon's Domain*, by Dr. Bertram M. Bernheim (pp. 217; 9s. 6d.; Kingswood, Surrey: The World's Work (1913), Ltd.), is a frank and amusing commentary on American surgery as seen through the eyes of one who, as he admits himself, came in by the back door. Dr. Bernheim has been for many years attached to the Johns Hopkins Medical School, and gives personal reminiscences of many of its great men. His cheerfully tolerant attitude towards dichotomy, commercialized operating, and slipshod diagnosis may alarm some of his readers in Britain and embarrass some of his colleagues in America, but the narrative runs with a cheerful swing that cannot fail to interest the surgical reader.

## BOOKS RECEIVED

*[Review is not precluded by notice here of books recently received]*

***Text-Book of Ophthalmology.*** By Sir W. S. Duke-Elder, K.C.V.O., M.A., D.Sc., Ph.D., M.D., Ch.B., F.R.C.S. Vol. 4. (Pp. 1,154. 70s.) London: Henry Kimpton. 1949.

This volume is concerned with the neurology of vision and motor and optical anomalies.

***Nutrition and Physical Fitness.*** By L. J. Bogert, Ph.D. 5th ed. (Pp. 610. 21s.) London: W. B. Saunders. 1949.

A non-technical work.

***A Comprehensive Review of Dentistry.*** Edited by V. R. Trapozzano, D.D.S., F.A.D.P. (Pp. 661. 32s. 6d.) London: W. B. Saunders. 1949.

In catechism form, written for United States dental students.

***Histopathology of Irradiation from External and Internal Sources.*** Edited by W. Bloom, M.D. (Pp. 808. 48s.) London: McGraw-Hill. 1948.

Report of three years' research under the direction of the Atomic Energy Commission.

***Muscles: Testing and Function.*** By H. O. Kendall and F. P. Kendall. (Pp. 278. 41s.) London: Baillière, Tindall and Cox. 1949.

Illustrated descriptions of muscle-testing procedures and the functional significance of muscle weakness and contracture.

***Diagnostische und Therapeutische Eingriffe des Internisten.*** By E. Regenbogen. (Pp. 262. M. 14.40.) Stuttgart: Georg Thieme. 1949.

Clinical methods for the house officer

***Foundations of Psychology.*** Edited by E. G. Boring and others. (Pp. 632. 24s.) London: Chapman and Hall. 1948.

An elementary textbook.

***Lung Dust Lesions (Pneumoconiosis) versus Tuberculosis.*** By L. G. Cole, M.D., F.A.C.R. (Pp. 474. $10.00.) New York: American Medical Films. 1948.

Differential diagnosis is emphasized.

***Cirugia de las Parálisis Espásticas.*** By F. B. Mora. (Pp. 151. 65 cents.) Jose Janes. 1948.

Surgery of spastic paralysis.

***L'Anesthésie au Cyclopropane.*** By Dr. Lavoine. (Pp. 126. No price.) Paris: Vigot. 1949.

A short account of cyclopropane anaesthesia.

***Hematology.*** By C. C. Sturgis, M.D. (Pp. 915. 63s.) Oxford: Blackwell. 1949.

A comprehensive work.

***Atlas der Augenkrankheiten.*** By R. Thiel. 5th ed. (Pp. 225. M. 60.) Stuttgart: Georg Thieme. 1948.

An atlas of diseases of the eye.

***Les Maladies de L'Appareil Cardio-Vasculaire et les Maladies du Sang.*** By J. Trabaud and J. R. Trabaud. Vol. 4. 2nd ed. (Pp. 216. No price.) Paris: Vigot. 1949.

A handbook of treatment.

***Die Durchleuchtungstechnik der Thoraxorgane.*** By E. A. Zimmer. (Pp. 119. 12.50 Swiss francs.) Basle: Benno Schwabe. 1949.

An account of the uses of fluoroscopy.

***Dermatologische Kosmetik.*** By L. Kumer. (Pp. 192. Sch. 30.) Vienna: Wilhelm Maudrich. 1949.

A short book on dermatology, mainly concerned with treatment.

***Society and the Criminal.*** By Sir Norwood East, M.D., F.R.C.P. (Pp. 315. 10s.) London: H.M.S.O. 1949.

***Anaesthetics for Medical Students.*** By Gordon Ostlere, M.B., B.Chir., D.A. (Pp. 108. 7s. 6d.) London: J. and A. Churchill. 1949.

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## AN A3 NATION?

The physical measurements and state of health of recruits to the fighting Services have often been used as evidence of the general health of the nation. In fact, in both peace and war such figures are of very doubtful value. In peacetime—before 1939, that is—the recruits offering themselves were self-selected and certainly not a cross-section of the young male population. In addition, the standards set for their acceptance or rejection varied from time to time with the needs of the Services for men. During war the examinations are spread over a very much wider field, but many occupations are reserved and the men in them not called up. Once more this limitation of the men medically examined must seriously affect the picture and make it inapplicable to the male population as a whole. The best example of such bias was probably the famous "C3 nation" report[1] of the first world war, for this was based upon the medical boards' returns for 1918, when the men examined were the residue of repeated examinations and the physically fit had already been enlisted.

With the coming into force in 1939 of the Militia Training Act a much more hopeful prospect of obtaining satisfactory statistics at once became apparent. Under the regulations every male aged between 20 and 21 years of age was obliged to register for military training. Owing to the outbreak of the second world war the examination of the, roughly, 300,000 young men concerned was not completed, but some 90,000 had been through the medical boards, their priority being based merely upon date of birth. A few exempted or deferred trades—the most important of which would be farm workers—prevent this sample being strictly representative in the statistical sense, but it is certainly good enough to give a reliable picture of the young men of 1939. These data were therefore made available to the Medical Research Council by the Ministry of Labour and have been fully analysed by Dr. W. J. Martin,[2] working in the Council's Statistical Research Unit at the London School of Hygiene and Tropical Medicine.

Martin's report is certainly a sound corrective to the pessimism created by the "C3" report of 1920, and, indeed, is encouraging in that it is based upon data obtained so soon after the years of economic depression in the early nineteen thirties. Slightly over 81% of those examined were put in Grade I—men fully fit or with remediable and only minor disabilities. Nine per cent. fell in Grade II—men with poor eyesight, deformities of the feet, or other moderate defects—while 5.2% came into Grade III and 2.7% into Grade IV—men with marked disabilities or serious disease. (A proportion of these would, of course, have been absent from the examinations—in sanatoria and hospitals—and consequently there is some understatement of the number in the final grade.) Subdivision of these figures shows a rather higher standard of fitness in the countryman as compared with the townsman, and it is interesting to note that this superiority is quite, indeed particularly, distinct in the measurements of eyesight. Thus men with a visual acuity of 6/6 or better in both eyes formed 73% of the total in the rural districts, 67.5% in the small towns, and only 62.5% in the large towns.

The average physical measurements of all these young men are expressed by a weight of 135.7 pounds (61.6 kg.), a height of 5 ft. 7.5 in. (1.69 metres), and a chest circumference of 35.6 in. (89 cm.). In these measurements, too, the country dweller holds some advantage, and migrants from their place of birth were on the average physically superior, though slightly, to the stay-at-homes. This difference may bear upon the level of local mortality and morbidity rates, the migrants being, as has been believed in the past, the more physically fit. It is this mobility of the population that perhaps accounts for the relatively small differences in physique displayed by Martin's detailed regional analyses. The maximum difference in the mean stature is only about one inch (2.5 cm.)—from a mean of 68.1 in. (1.70 metres) in the home counties to 67.0 in. (1.68 metres) in Lancashire. In weight the differences are rather larger but not really great, the highest averages being 138½ to 138¾ lb. (62.88–62.99 kg.) in the southern and home counties, and the lowest 132 lb. (59.93 kg.), again in Lancashire. Taking the three countries as a whole, there is surprisingly little difference between England, Wales, and Scotland.

These figures, though confined to males of a particular year of life, are on an unprecedented scale for this country, and should clearly form a very useful yardstick against which to measure progress or deterioration. It may be hoped, therefore, that further analyses will some time be made of the post-war generation of young men. The value of this field of observation has also been recently, perhaps unexpectedly, shown in quite another connexion. In the investigation by Drs. Alice Stewart and J. P. W. Hughes of tuberculosis in the boot and shoe trade, published in this *Journal* last week (p. 926), it was found that the physique of men called up in 1942–3 was rather lower in the shoemakers than in other trades. Thus it seems that this occupation may to some extent attract men of subnormal physique—a fact which might well contribute to the excess of phthisis among them. Martin's pre-war figures will also be of interest to the worker in anthropology and to those who have the rather more prosaic, but very important, task of seeing that machines, benches, uniforms, etc., are made to fit the man.

[1] *Physical Examination of Men of Military Age by National Service Medical Boards.* 1921. London: H.M.S.O.
[2] *The Physique of Young Adult Males.* Med. Res. Coun. Memo. No. 20, 1949. London: H.M.S.O. Price 1s. 3d.

## SURGERY IN THE TREATMENT OF MENINGITIS

The development of the different sulphonamides, penicillin, and streptomycin has been of such rapidity that it is difficult to appreciate the improvement in the prophylaxis and treatment of many types of infections which have followed their introduction. Improved prognosis has emphasized the importance of early diagnosis and stimulated investi-

gators to determine the most efficient methods of systemic and local chemotherapy. In infections of the meninges, formerly so often fatal, the alteration in prognosis has been remarkable. Further, the risks of meningeal infection following brain wounds, basal skull fractures, and the surgical therapy of brain abscesses, as well as in other intracranial operations, have been greatly reduced. In a University of London lecture published in the opening pages of this issue Sir Hugh Cairns discusses the pathology and treatment of meningitis in the light of the knowledge gained since the introduction of chemotherapy.

Apart altogether from the infection of the meninges, there arises in most cases a varying degree of obstruction to the circulation of the cerebrospinal fluid. This is important not only because it leads to an internal hydrocephalus but also because it may prevent antibiotics introduced into the meningeal spaces from being adequately distributed through them. While in the early stage of the inflammatory processes such obstruction will be due to pus and fibrin, organization of granulation tissue at a later stage may cause permanent obstruction by fibrous adhesions. Such a possibility must be borne in mind and treatment given if necessary, for death from hydrocephalus may occur in spite of successful sterilization of the meninges. Even minor degrees of obstruction to the flow of cerebrospinal fluid from the ventricles to the subarachnoid space may be associated with the formation of a pressure cone at the tentorial opening or the foramen magnum, with a consequent aggravation of the block. Cairns stresses the tendency for meningitis to recur. This may be due to the persistence of the infective process which gave rise to the meningitis. The importance of adequate therapy for the primary lesion —for example, a chronic otitic infection—is thus clear. But recrudescence of infection may be the result of the encapsulation of organisms by non-vascular fibrin, which protects them from antibiotics: therapy must continue until the fibrin is absorbed or organized into a fibrous tissue capsule for the contained organisms. Alteration of the patient's posture may prevent the gravitation of pus and fibrin into the posterior portions of the ventricles and subarachnoid space.

The operations which may be required during the course of meningitis include such diagnostic procedures as lumbar and ventricular puncture and pneumo-encephalography, as well as the introduction of antibiotics into the cerebrospinal-fluid spaces. While lumbar injection of the latter may suffice, evidence of a developing spinal block, obtained manometrically and by examination of the cerebrospinal fluid, indicates the need for cisternal or ventricular injections. Meningitis may often follow head injuries in which there is a fracture of the anterior cranial fossa, and in cases of cerebrospinal-fluid rhinorrhoea or of aerocele dural repair must be carried out early to prevent this complication. If these signs are absent, and if there is no clear radiological indication of the site of a fistula between the meninges and the nose or one of its accessory sinuses, the indications for prophylactic surgery are by no means clear.

Perhaps in due course the most important aim of surgery in the treatment of meningitis will be to overcome obstructions to the cerebrospinal-fluid circulation. In the acute stage of such obstruction drainage of the inflammatory exudate by lumbar or ventricular puncture will suffice, but in the stage of formation of fibrous adhesions more radical treatment will be required. The site of the obstruction must be accurately determined—pneumo-encephalography is useful for this purpose—and it is also important to differentiate between the cases of communicating and non-communicating hydrocephalus. In this connexion Cairns suggests that antibiotics may be used as trace substances to replace the better-known Dandy dye test.[1] It seems likely that the obstruction to the circulation of cerebrospinal fluid in many cases of meningitis will be in the subarachnoid space—even when the hydrocephalus is of the non-communicating type; and when an obstruction in the neighbourhood of the cisterna magna exists it is probable that other cisternae in the posterior cranial fossa and above it will frequently be stenosed. In such circumstances an opening into the fourth ventricle through the obliterated cisterna magna will do no more than bring the ventricle into continuity with the subdural space. The recent advances in the treatment of meningeal infection may thus lead to the extension of the pioneer work of Dandy in the treatment of internal hydrocephalus. Perhaps a reduction in the secretion of cerebrospinal fluid which Dandy and, later, Putnam and Scarff[2] have obtained in cases of communicating hydrocephalus by cauterizing the choroid plexus may provide a solution in some cases.

[1] *Ann. Surg.*, 1918, **68**, 569.
[2] *Amer. J. Dis. Child*, 1942, **63**, 297.

## INDUSTRIAL REHABILITATION

Occupational health may be difficult to define, but those whose aim it is to promote it are concerned, in the words of the Council's useful report on "A Comprehensive Occupational Health Service,"[1] with the study of individuals in relation to the physical and psychological demands of their occupations, and of work and the work environment in relation to their effects on health. Many industrial workers with some sort of disability, mental or physical, suffer from ill-health rather than occupational ill-health. They have made the best of things; they work in a job where their limitations are recognized and their capabilities allowed full expression, and they feel content. There are others—and in many cases their physical disabilities are slight—who find it impossible to get back to work after an illness or accident. The industrial rehabilitation service takes care of these, and it can also help those who, because of some long-standing condition, are gradually overcome by a sense of inadequacy to such an extent that they feel incompetent to continue working even if the physical disability may be no worse. This service is run by the Ministry of Labour, which established a centre at Egham, Surrey, in 1943 and since August of last year has opened eleven others, including the one at Leicester described on another page.

The work is still in the experimental stage, but the results so far seem to justify its being continued and indeed expanded. Most of the cases admitted to the Leicester

[1] *British Medical Journal Supplement*, 1949, **1**, 296.
[2] *British Medical Journal*, 1949, **1**, 965.
[3] *British Medical Journal Supplement*, 1946, **1**, 187.

unit have some mild psychological disability. The unit finds that a considerable number of these have become neurotic since being given a certificate for "light work" by their doctors. In many factories light work is menial work, and workers are apt to become demoralized by having to do it for long. Unfortunately, the only alternative open to most of them is to stay at home, though some of the Leicester staff thought that this would be the lesser evil. The ideal would be to send all those who wish it to a local rehabilitation unit, facilities for which do not exist at present in most places. Though giving the temporarily disabled light work seems to help the production drive, it may well in the end hinder it by creating a large body of men who, having once slipped from their industrial niche, are unable to return to it.

The Government's policy of full employment is too limited in scope: it refers to men rather than to ability. Many industrial workers are vaguely discontented because their talents are not fully employed. The rehabilitation services can help to solve the problem, though the best solution may lie deeper—in modifying industrial methods, on which much investigation is being done by industrial psychologists. An important function of these units is assessing ability. They give the man a chance to show what sort of work he is best able to do, and this is an important factor in restoring his self-confidence. It is essential also for doctors to know something of conditions in the factories where their patients work, and they can gain useful information and help from employment exchanges and the Ministry of Labour's Disablement Rehabilitation Officers. The fruitful results of collaboration with these officers are recorded by Dr. Harris and Miss Lane at page 982.

Whether the Ministry of Labour ought to be in charge of rehabilitation is questionable. It has established these units under the Disabled Persons (Employment) Act, 1944. Meanwhile the Minister of Health is urging hospitals to increase their facilities for rehabilitation. Though both Ministries are in Whitehall it sometimes seems that technical advances in the last 100 years have done little to speed communication between them, and it is unlikely that each could run its own rehabilitation service without duplication, confusion, and waste. The Minister of Health has stated recently in a memorandum[2] to hospitals that "every practitioner should assume responsibility for seeing his patients through to the point where they can either resume their former employment or be passed to the Ministry of Labour's disablement resettlement officers for placing in some suitable alternative occupation." Yet many of these are precisely the patients that ought to go to industrial rehabilitation units. The report[3] of the Association's Rehabilitation Committee in 1946 emphasizes that the medical services of industry should be part of a comprehensive health service administered by a single Government Department, and the Council in its report on a comprehensive occupational health service expressed its opinion that the Ministry of Health is the appropriate central authority to plan and supervise such a service. It would seem to be proper for industrial rehabilitation to be a part of that service and come under the Ministry of Health.

## SECRETARY OF THE MEDICAL RESEARCH COUNCIL

Under the National Health Insurance Act of 1911 provision was made for a medical research fund, and in 1913 the Medical Research Committee was established to administer this fund. Walter Morley Fletcher was appointed the first secretary of the committee in 1914, and when the Ministry of Health was established in 1919 the responsibility for Government-aided medical research was placed in the hands of a committee of the Privy Council. In 1920 the Medical Research Committee was reconstituted as the Medical Research Council and incorporated by Royal Charter. The secretary of the M.R.C. is also secretary of the Committee of the Privy Council for Medical Research. The Medical Research Council itself is responsible for the election of the secretary. It consists of twelve members, nine of whom are chosen for their scientific and medical distinction; of the other three one must be a representative of the House of Lords and one of the House of Commons. This rule of election removes the risk of political influence and interference with the work of the M.R.C., and the fact that its secretary is also secretary of the Privy Council committee provides for direct contact between him and the Lord President of the Council, the Minister responsible to Parliament for the work of the M.R.C. These sound provisions were the result largely of the wise statesmanship of the late Sir Walter Fletcher.

Sir Edward Mellanby retires from his position as secretary of the Medical Research Council on Oct. 1 and will be succeeded in this onerous and responsible post by Professor H. P. Himsworth, now Director of the Medical Unit of University College Hospital. Edward Mellanby, the second secretary of the M.R.C., was appointed in 1934. At that time he occupied the Chair of Pharmacology at Sheffield and was honorary physician to Sheffield Infirmary and a member of the M.R.C. At the time of his appointment he had already had a distinguished career as a research worker, research that had been largely directed to nutritional problems. In 1918 he showed that rickets was due to the absence from the diet of a fat-soluble factor, which McCallum and his co-workers subsequently proved to be vitamin D. He found phytic acid was one of the factors responsible for the rachitogenic influence of cereals which he had demonstrated in 1922. Mellanby summarized in his Croonian lectures to the Royal Society in 1943 his work on the effect of vitamin A on the growth and shape of bones and so indirectly on the function of the central nervous system. In 1946 we had the privilege of publishing[1] his discovery of the ill effect of agenized flour on dogs, observations subsequently confirmed by himself[2] and other workers. One outcome of this is that the food and drug administration in the U.S.A. has introduced legislation against the use of agene in the bleaching of flour. It is indeed remarkable that Sir Edward Mellanby, in spite of the heavy and growing administrative duties of the secretary of the M.R.C., has nevertheless during his period of office been able to make such important contributions to

[1] *British Medical Journal*, 1946, 2, 885.
[2] Ibid., 1947, 2, 288.
[3] Ibid., 1948, 1, 942.
[4] Ibid., 1948, 1, 983.

research ; and it is of interest to note that his distinguished wife, Lady Mellanby, has shared his interest in nutritional problems in her series of investigations into dental caries. The severest testing-time for the Medical Research Council came in the war of 1939–45, and under its secretary's enlightened guidance the Medical Research Council threw itself into solving the many problems of health and disease confronting this country during that period of storm and stress. The work done during this time was recorded in a special report of the Medical Research Council and summarized in these columns.[3]

Professor H. P. Himsworth, whose election as the new secretary of the M.R.C. will be widely welcomed by the medical profession, has a difficult but inspiring task in succeeding to such eminent predecessors in his office. His published work gives an impressive record of research into various aspects of diabetes, on which subject he gave the Goulstonian lectures of the Royal College of Physicians in 1939. Another subject to which Professor Himsworth has made important contributions is liver disease, and in a review in these columns[4] of his monograph on this, published in 1947, it was stated : " The crucial moment in Professor Himsworth's researches was when he decided that the best way to begin studying T.N.T. poisoning in man was to feed T.N.T. to rats." His contribution on another of his themes—thiouracil in thyrotoxicosis—to the Annual Meeting of the B.M.A. at Cambridge last year was published in the *Journal* of July 10, 1948. His work made him ideally suited as President of the Section of Experimental Medicine of the Royal Society of Medicine. In greeting Professor Himsworth as his successor the medical profession will wish Sir Edward Mellanby years of success in the research work to which he will now be able to give much more of his time.

## CANCER OF THE CERVIX

The study of the social factors associated with cancer of specific sites has provided clues which have made possible the prevention of whole groups of cases, as, for example, industrial cancers of the skin, and there is evidence to suggest that in a similar way the commoner cancers of the mouth, stomach, lung, and uterus may be discovered to be preventable. Elsewhere in this issue Dr. R. G. Maliphant reports on a series of 1,200 cases of cancer of the uterine cervix which he has studied in order to determine the relation of this condition to age, marriage, and child-bearing. The Registrar-General's mortality figures have shown that cancer of the uterus is commoner in married than in single women, and that under the age of 55 it is relatively rarely associated with infertility. It is unfortunate that these figures cannot be separated into cases of cancer of the cervix and cancer of the body of the uterus, but probably the differences would be even greater in the case of cancer of the cervix. Nor can it be determined from the Registrar-General's data whether marriage contributes to the production of cancer of the uterus in any way other than by predisposing to child-bearing. On such points a clinical inquiry can be of great value.

The possibility that marriage could be of importance in itself, apart from childbirth, has recently been stressed by Kennaway.[1] He has collected statistics from many countries indicating that the incidence of cancer of the uterus in Jewesses is only about a third of that in other sections of the community—a low incidence which appears to be due entirely to the infrequency of cases of cancer of the cervix. Handley[2] believes that this is a consequence of the male practice of circumcision, and he cites the low incidence of the condition in the natives of Fiji, where the men are circumcised, in contrast to that in the Hindu immigrants. Kennaway, on the other hand, suggests that the Jewish practice of abstention from intercourse during the first half of the menstrual cycle is a more likely explanation. If either of these hypotheses are true (and there are some who maintain that they are unnecessary and that heredity is a sufficient explanation) it must be expected that marriage will contribute to the development of cancer of the cervix even in the absence of child-bearing.

According to Maliphant's findings marriage does so contribute. In his series of cases marriage more than doubled the risk, while child-bearing increased it tenfold ; moreover, the greater the number of children the greater the risk became. To obtain these results he compared his series, collected over the years 1922–46, with the Family Census conducted by the Royal Commission on Population in 1946. This difference in time detracts from the confidence which can be placed in the results, particularly that of increased risk with each addition to the size of the family—a finding contrary to Lane-Claypon's[3] experience. For though the marriage and infertility rates may not have altered appreciably, the average size of family has certainly fallen. Maliphant recognizes the difficulty and makes such allowances as can be made, but, good though his reasoning is, some doubt must remain until a more exactly controlled series can be obtained.

He does not believe his findings indicate that any prophylactic measures are practicable other than early diagnosis. Yet if marriage in itself increases the risk, and Jewish women, who do not notably refrain from marriage, are largely immune, it would seem reasonable to inquire whether there is not something that can be learnt from Jewish customs. There remains also the Registrar-General's observation that uterine cancer is commoner among women of the poorer social classes, single as well as married, and this observation may also suggest methods of prophylaxis.

## PREGNANCY AND THE THYROID GLAND

The role of the thyroid gland in pregnancy, and the changes it undergoes, have been the subject of much speculation though but little careful investigation. Certain facts are undisputed : for example, complete absence or extirpation of the thyroid gland causes sterility in both sexes, though once pregnancy is established thyroidectomy does not interrupt it ; clinical hyperthyroidism does not prevent conception or alter the normal course of pregnancy ; and hyperplasia of the gland occurs in pregnancy, though there is no certainty that this hyperplasia is associated with hyperfunction. On the other hand, the evidence is much less conclusive for the widely held belief that hypothyroidism, even of " subclinical " degree, may cause impaired fertility and that administration of dried thyroid extract corrects the condition, or for the perhaps less generally accepted opinion that hypothyroidism may be responsible for abortion, toxaemia, and other disorders of pregnancy.

In order to gain more certain knowledge of some of these relationships Peters, Man, and Heinemann[1] studied

[1] *Brit. J. Cancer*, 1948, **2**, 177.
[2] *Lancet*, 1936, **1**, 987.
[3] *Cancer of the Uterus*, Ministry of Health Report No. 40, 1927, London.

[1] *Yale J. Biol. Med.*, 1948, **20**, 449.
[2] *J. biol. Chem.*, 1947, **171**, 439.

precipitable iodine of the serum in several groups of women. They found that in normal non-pregnant women the precipitable iodine varies between 4 and 7 γ per 100 ml. of serum. In 22 pregnant women, from the second month of gestation to full term, the range was from 6.2 to 11.2 γ (mean 8.3 γ). This rise in serum precipitable iodine was found not to run parallel with the rise in the basal metabolic rate, since the former occurs very early in pregnancy whereas the latter begins only after the fourth month. Twelve precipitable iodine estimations on the sera of women with threatened abortion, or who actually aborted, ranged from 2.8 to 6 γ per 100 ml.; in eight of these cases the figure was less than 6.2 γ, which was the lowest concentration found among normal pregnant women. None of these women showed signs of hypothyroidism. Seven patients in whom serum iodine concentrations of less than 6 γ per 100 ml. were discovered early in pregnancy were treated with thyroid extract; in all cases the treatment raised the level of precipitable iodine in the serum, and the pregnancies proceeded without interruption. With commendable caution the authors suggest that deficiency of precipitable iodine in the serum may be the cause of some, though certainly not all, miscarriages. They estimated the concentration of precipitable iodine in the serum of women with histories of repeated miscarriages in the intervals between pregnancies, but they found no significant differences when these figures were compared with those obtained in the case of normal non-pregnant women, nor did they find the serum precipitable iodine below normal in any of a group of 20 women who sought advice because of infertility. The latter finding lends no support to the belief that thyroid deficiency is a frequent cause of infertility. In four cases of toxaemia of pregnancy the values were again within the normal limits for pregnancy.

It cannot be regarded as proved that the amount of precipitable iodine in the serum closely reflects the thyroid hormone content of the blood. However, there is evidence to support this contention, notably that provided by Taurog and Chaikoff,[2] who by means of the technique of isotope dilution—using thyroxine labelled with radioactive iodine—have directly identified the precipitable iodine of normal serum with thyroxine. Though the number of cases studied by Peters and his colleagues was small (as they fully admit), their investigation of the thyroid gland in pregnancy is a useful contribution to the subject. Since the technique of assaying the precipitable iodine in the serum is relatively simple, there should be no practical difficulties to prevent similar studies being undertaken on larger groups of cases.

## TREATMENT OF ANGINA WITH THIOURACIL

The treatment of angina pectoris by total removal of the thyroid gland was introduced by Blumgart, Levine, and Berlin in 1933, and though it met with some success it has since been abandoned, even by its authors, owing to the serious and irrevocable nature of the operation, the difficulty of estimating the required dose of thyroid extract in patients with spontaneous variations in the severity of their angina, the raised blood cholesterol, and occasional unfortunate complications such as tetany and recurrent laryngeal paralysis. Nevertheless, the idea that angina pectoris could be improved by reducing the circulatory demands of the body and by depressing the physiological responses to adrenaline was sound. When thiouracil began to be used clinically it was an obvious step to try it in cases of angina pectoris, for if the result was unsatisfactory the drug could be abandoned and the *status quo* restored. The usual dose is 0.2 g. t.d.s. until there is demonstrable improvement, when it may be reduced to 0.3–0.1 g. daily. With propylthiouracil toxic reactions are rare, but fever and rashes are not uncommon with methylthiouracil, which may not be well tolerated by patients with angina. The usual precautions against agranulocytosis must also be taken. Treatment should not be considered a failure unless there is no improvement after six weeks; most patients are better after 14 days.

Fisher and Zukerman[1] strongly support the claims made for thiouracil in the treatment of angina pectoris: they obtained good results in 14 out of 16 cases. Last year in this *Journal* Dr. G. Shoenewald[2] also reported good results in three cases. In a series of 10 cases Hollander and Mandelbaum[3] noticed improvement in only four after treatment with propylthiouracil, but they consider further trial of the drug is warranted. It is time a large series of cases was treated under scientifically controlled conditions.

## THE ROYAL SOCIETY

The guests of the Royal Society at its Conversazione on May 26 once again enjoyed an exhibition of intellectual grace and wit without having to endure the many hours of patient research that lay behind it. Several advances in microscopy of interest to medical men were demonstrated. Mr. J. Dyson, of the Associated Electrical Industries Research Laboratory, showed how a microscope could be adapted by means of a special optical system for examining material some distance from the objective lens. Surgeons may find such an instrument useful for scrutinizing more closely the tissues displayed at operation if sufficient illumination can be obtained. Phase-contrast microscopy, by which the structure of living unstained tissues and organisms can be clearly discerned, was a feature of last year's exhibition. On Thursday Dr. J. R. Baker and his colleagues, of the Department of Zoology, Oxford, showed how an ordinary microscope can be adapted to the method with simple apparatus and at low cost. Their ingenuity should be of help to medical schools, where all the microscopes could readily be used for routine teaching by the phase-contrast technique.

The National Institute of Medical Research was displaying beautiful electronic micrographs of viruses adsorbed on the membranes of fowl red cells, and in a quiet corner it illustrated with skiagrams and photographs the dire effects of rickets on *Xenopus laevis* toads. When xenopus toads were bred in this country after their importation had been prevented by the outbreak of war they were found to have bony deformities and fractures, characteristic features being enlargement of the lower jaw and arched back. Investigation showed that, unlike rats, they must be supplied with vitamin D as well as calcium and phosphorus for bone formation. Dr. Lester Smith, of Glaxo Laboratories, showed how the anti-pernicious-anaemia factor, vitamin $B_{12}$, is extracted by means of partition chromatography from liver, which contains only about one part per million.

A notable contribution to the amity of man was a machine that played noughts and crosses with a human opponent. The Fellows were to be seen battling bravely against its electrical circuits, but logic triumphed, and it always won or drew, though on one occasion a spirit of slightly embarrassed satisfaction ran through the audience when it made a mistake because of a technical hitch. The suggestion, the possibility, of imperfection seemed to illuminate a more distant horizon, and to add wonder to contentment.

[1] *British Medical Journal*, 1948, **1**, 251.
[2] *J. Mich. med. Soc.*, 1947, **46**, 1059.
[3] *Ann. int. Med.*, 1948, **28**, 1150.

# ROYAL SANITARY INSTITUTE CONGRESS

## HEALTH SERVICES UNDER THE NEW ACT

The annual Health Congress of the Royal Sanitary Institute, held at Brighton during the week beginning May 23, attracted an attendance of about 2,400, including delegates from foreign, dominion, and colonial governments, home Government departments, nearly 1,000 local authorities, and universities and voluntary organizations. The eight sections were devoted respectively to preventive medicine, engineering and architecture, maternal and child health, veterinary hygiene, food and nutrition, housing and town planning, tropical hygiene, and hygiene in industry. There were special conferences for medical officers of health, engineers and surveyors, sanitary inspectors, and health visitors.

### Preventive Services "Played Down"

In the Preventive Medicine Section Professor Andrew Topping, of Manchester University, devoted his presidential address to the National Health Service. He declared himself an ardent protagonist of a State medical service.

"I was, and still am, in favour of a salaried service, and, although the profession as a whole has violently opposed this view, I believe that more and more of the thinking element are beginning to realize that the advantages would far outweigh the disadvantages, and that were it introduced, it would immediately remove many of the difficulties, financial and otherwise, which now beset the Service."

Professor Topping's criticism of the present Service was that its emphasis was entirely wrong. Curative medicine was very generally given pride of place, and prevention was very much the poor hanger-on. "The great majority of doctors would welcome the opportunity of taking an active part in disease prevention, but they are so snowed under with routine treatment of trivialities that the urge quickly dies and consciences become hardened." He found it depressing to read of complaints from a doctor that if he was called to see a child the mother expected him to discuss her own health and that of other members of the family. The complaint was understandable under present conditions of overwork, but it would have shown a better appreciation of realities if the doctor had regretted his inability to meet the mother's wishes and had not dismissed them as intrinsically wrong.

"The Minister of Health has tacitly given his blessing to the present state of affairs by taking unction to his soul for the astronomical increase in the number of bottles issued since the inception of the Service. We all know perfectly well that this feature is very far from being indicative of an improved health service, and it is unfortunate that the great mass of the unthinking public are being confirmed in their erroneous impression that it is so. With very few, if any, exceptions, major improvements in the health of the people have been attributable to betterment of the general standard of living and to the preventive health services rather than to the work of general practitioners or hospital staffs."

The marked fall in the number of students taking the D.P.H., Professor Topping added, was indicative of the difference between the remuneration offered to the newly qualified assistant in general practice, who could get a salary of about £1,000 a year, and to the assistant medical officer, who must have been qualified for at least three years, and preferably should hold a higher qualification, and was offered a salary of £700. It was tragic that one of the immediate, though unforeseen, effects of the new Act had been to "play down" the preventive services and dissuade young medical men and women from making preventive medicine their career.

He attacked with equal vigour the Minister's mistake in not giving priority to health centres with housing, and concluded with the remark that "if we are still demanding more hospital beds ten years from now our health services have been a failure."

### Research in Public Health

The opportunities for research in the sphere of public health were discussed by Dr. C. Metcalfe Brown (M.O.H., Manchester). He mentioned the recent investigation in which Manchester had co-operated with a number of other towns in various parts of the country in research, originated and controlled by the Medical Research Council, into the efficacy of whooping-cough vaccines. This was an admirable example of teamwork, bringing in several universities, public health laboratories, and local authority health departments. In Manchester alone 6,000 children had been included in the trials. Again in Manchester and in other areas trials were being made of a British gamma globulin for the prevention and modification of measles in young children, and in the near future an investigation into the safety and antigenic potency of new diphtheria prophylactics was to be undertaken. Twelve county boroughs had agreed to use in their respective areas one of two new phosphate-adsorbed toxoids and to investigate over one or two years the reaction rates, any untoward sequelae, and the incidence of diphtheria among the inoculated.

Sir W. Allen Daley (Chief Medical Officer, L.C.C.), in an address to a conference of medical officers of health, said that the new Act had come into operation with much less disturbance and friction than many expected. This was due to the abundant good will which had been displayed by all concerned and a single-minded desire to make this great experiment a success. Medical officers of health were anxious to proceed with the provision of health centres, and in this connexion joint consultations between the executive council and the local medical and dental committees were needed. Except on large new housing estates, to which doctors would have to be imported, it was necessary to ensure that the local doctors wanted to work in and from a health centre before steps were taken to acquire and adapt property or erect new buildings. Some health centres must be got into commission quickly so that experience might be gained by experimenting with various types.

One of the most important sections of the Act, Sir Allen Daley continued, was that which dealt with "care and after-care." This had already created many difficulties. First, there was the differentiation between convalescent-home treatment provided free of charge by the hospital authority and admission to holiday homes for which the health authorities were recommended by the Ministry to make a charge. Medical opinion on whether convalescence or a holiday was needed in an individual case might well differ. He looked forward to the day when preventive measures could be applied to many more diseases than was now possible, and when every patient discharged from hospital would pass to the joint care of the general practitioner and the aftercare officers of the health authority.

In a reference to the midwifery service, Sir Allen Daley urged that there should be greater uniformity in the criteria required for admission to the list of general-practitioner obstetricians. Some committees, he understood, had approved all applicants, while others had been quite rigid in requiring that those admitted to the list should have had special postgraduate experience in obstetrics. The extent of the responsibilities to be carried by the midwife and whether or not she would be allowed to be the "specialist in normal midwifery" would determine the quality of future entrants to the profession.

### Institutional Midwifery

The case for and against institutional midwifery was argued by Dr. J. Stevenson Logan (M.O.H., Southend-on-Sea). A high proportion of institutional deliveries was not necessary for the achievement of low maternal and neonatal death rates or stillbirth rates, as was shown by experience in Holland, where 80% of the babies were born at home. The abnormal or complicated pregnancy would always call for treatment in hospital, and, while overcrowding existed, the ordinary decencies demanded maternity beds. But on the other hand the woman confined in hospital or in a maternity home was deprived to a greater or less degree of the close contact with her baby in the early days of its life, and opinion among paediatricians and psychologists alike seemed to be that the importance of this factor had been overlooked by the more enthusiastic advocates of institutional confinements.

"Looking at it from the community point of view, can we afford at this juncture, when hospital provision is so desperately needed for those who cannot in any circumstances be adequately cared for and relieved at home, to contemplate the unregulated increase of maternity beds, which can only be made at the expense of other hospital provision?"

Dr. Logan also touched on the question of analgesia, and mentioned that one of his midwives told him that since the publication of details about the recent royal confinement the demand for analgesia had been stimulated. If this was at all true of the country as a whole, it showed how perilous it was to be dogmatic about what was really necessary or what women really wanted. It was clear, however, that arrangements for analgesia required strengthening, and it might be that the awareness of the midwifery profession as a whole required quickening. The state of affairs when a woman who genuinely desired analgesia was denied it should be ended as quickly as possible.

### Points from Other Contributions

A section under the presidency of Professor Thomas Ferguson, of Glasgow University, discussed hygiene in industry. Professor Ferguson said that the total number of disabled persons in the United Kingdom was about 900,000, of whom 8 to 9% were unemployed. About 40% of the disabled were surgical cases, and 25% medical, with smaller proportions falling into psychiatric and other groups. He described the various residential centres for rehabilitation and the sheltered workshops, such as Hillington, near Glasgow.

Mr. William Gissane gave an account of the work of Birmingham Accident Hospital. He urged that the staffs of casualty and fracture departments should be trained at a central accident hospital. Some of these departments, he said, were first-class, others good, and some frankly bad, but they were a vital part of any regional accident service. Dr. Maxwell Jones described the work of the industrial neuroses unit which had been established for two years at Belmont Hospital, Sutton. The average length of stay was about three months. It was not expected to cure these patients, who were generally chronic neurotics, but to help them to become reasonably independent and self-supporting.

Under the presidency of Professor P. A. Buxton, a Tropical Diseases Section discussed principally the question of malaria control. Dr. P. C. C. Garnham said that in Northern Greece the present steep fall in the incidence of malaria was ascribed to natural conditions and only to a very limited extent to the D.D.T. campaign. At the same time, the attack on the mosquito by the new insecticides seemed to be fulfilling its early promise.

## INDUSTRIAL REHABILITATION UNIT

The Ministry of Labour opened an Industrial Rehabilitation Unit at Leicester in the middle of September, 1948. At first only non-resident cases were accepted, but from Jan. 17 of this year residents have been accommodated also. The non-residents are men and women from the surrounding area within a radius of about 15 miles. At present there are between 50 and 60 of them. The residents come from any part of the country—chiefly the North and Midlands—and only men are taken; there are 43.

The unit is controlled and financed by the Ministry of Labour and National Service. The manager has been chosen for his long experience of industrial conditions and additional experience of training men. He is not medically qualified. A part-time medical officer employed by the Minister of Labour visits the unit daily. He also has a wide knowledge of industry. There is a rehabilitation officer, whose background again is industrial, not medical, and a Ministry of Labour D.R.O. is also part of the team. A whole-time State-registered nurse looks after the patients and does any first aid that may be necessary, and a trained dietitian is in charge of the kitchen, which can provide special diets—for example, for patients recovered from peptic ulcer. A trained social welfare worker helps the patients over their domestic difficulties, visiting their homes to gain further information if necessary. There are in addition group supervisors who look after the patients in the workshops and garden.

### Source of Patients

The patients fall into two main groups, though the distinction is perhaps artificial, since there are all grades between the extremes. First, there are men who have passed the convalescent stage of some disorder but are left with a residual disability, often only psychological. These patients may have suffered from anything—fractured bones, the loss of a limb, tuberculosis—any medical or surgical disorder. Secondly, there are the patients who may have some long-standing defect and who have gradually become unable to work satisfactorily in industry. The condition itself may have become no worse, but the man's attitude to it has. More than half of the patients in both categories suffer from some form of neurosis or have psychopathic personalities.

The main channel of entry is through the employment exchanges. These are primarily men who have suffered some illness or accident and find they are unable to obtain a job in industry. Sometimes factories get into touch with the I.R.U. direct. In both circumstances the opinion of the employment exchange or factory must be backed by a medical opinion from the man's own general practitioner or a Ministry of Labour medical officer or a factory medical officer. If the man is referred by a factory or in any other way—for example, by his general practitioner—the unit then refers the matter to the man's local employment exchange and obtains information from them.

In assessing whether a man is suitable for rehabilitation the unit's first consideration is the ultimate chance of the man's employment when he leaves the unit. This is assessed on the information obtained from his local employment exchange, and great weight is attached to it. If there is little likelihood of the man's being employed in his trade in his own locality, and if he is unwilling to move elsewhere, he would not be accepted by the I.R.U. The I.R.U. does not train him for a new trade.

### Work at the Unit

When a man arrives at the unit the medical officer examines him and tells the manager what the man cannot do—for example, work in a dusty atmosphere, sit in draughts, or stand for long. He also lays downs a scheme of remedial exercises and treatment if necessary. The man is given an informal welcome to put him at his ease, and put on "diversionary work." This consists of some simple task, usually in the garden under the supervision of the gardener. Meanwhile the social welfare worker investigates his domestic difficulties and the group supervisors watch his behaviour. His characteristics are then assessed, and the man is put on to more specialized work such as handicrafts, bench or machine engineering, woodwork, and so on. He may be tested with Raven's matrices if necessary.

The course lasts up to twelve weeks, though the average is seven to eight. Towards the end of this time the man is put on a job in the unit, but often in contract with a firm outside. He then earns the normal wages and works the normal hours of industry. This stage is introduced to make him feel that he is once again a part of industry, and his future employer may be invited to see him at work and talk to him. So far 90% of the men and women have been returned to their old jobs, placed in other jobs, or sent for vocational training. Only intelligent and young patients pass to the vocational training centre. Of the remaining 10% some are discharged as medically unsuitable before the course ends, and a very few leave of their own accord.

The unit seems to be successful in making the patients fit for industry again, and particularly in overcoming the feelings of inadequacy from which so many of them suffer. It is following up the results at three- and six-monthly intervals. Though it is too early yet to say how significant they are, they seem to be very encouraging.

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The scheme under which new entrants to the South Wales coalfields have to undergo clinical and *x*-ray examinations is to be extended to recruits at all coalfields in Great Britain. This was announced by Mr. Alfred Robens, Parliamentary Secretary to the Ministry of Fuel and Power, who stated that the National Coal Board was building up its own medical service, which already consisted of a chief medical officer at headquarters and a medical officer in all the larger coal divisions. He said that fatalities in mines had gone down from the average of 1,200 a year between 1900 and 1920 to 467 in 1948, the lowest figure ever recorded. It should not be overlooked, however, that coal-mining is relatively still the most dangerous occupation and accounts for about one-quarter of the total fatal accidents occurring in industry.

# Preparations and Appliances

## A BRONCHIAL SUCTION CATHETER

Dr. J. L. GRIFFIN, senior anaesthetist, Taunton Hospital, writes: The instrument here described was designed primarily for routine use by the anaesthetist towards the end of upper abdominal operations and in chest cases, with the aim of preventing atelectasis. The catheter consists of a straight metal tube 27 cm. long, with a bore of 3 mm. The distal end is a rubber-covered flexible cable 7 cm. long, with an inherent curve and an atraumatic sucker end. A pointer at the proximal end indicates the direction of the curve (see diagram). The instrument is light in weight, so a heavier screw-on handle extension is supplied, which helps to counterbalance the rather heavy tubing from the sucker machine. Delicate control is thus obtained.

This catheter, tried out on the bronchial tree of the dissected lung, passed with certainty each time into the desired bronchus. *X*-ray photographs following a partial gastrectomy confirmed this. When air alone flows unobstructed through the catheter the suction apparatus develops a negative pressure of 8 in. Hg. It picks up thick mucus easily, and will pass down a No. 6 Magill tube if required.

*Technique of Use.*—The instrument should be well lubricated for its whole length by a water-soluble jelly. Extra lubricant is required if it is to pass through a Magill tube. The larynx is exposed by a laryngoscope (Macintosh) and, if necessary, the upper lip is held out of the line of vision by an assistant. Once the tip of the catheter is through the cords the laryngoscope may be withdrawn if desired and the suction switched on. By moving the catheter gently up and down the trachea, and rotating it at the same time, any mucus lying there is removed, since the sucker tip is constantly in contact with the tracheal wall. (For this reason it is more effective than the standard gum-elastic endotracheal catheter for tracheal toilet.) The catheter is next passed down into the right and then the left bronchus by making use of the pointer, and for more efficient suction of the branches may be rotated in this position; it should be kept moving while suction is applied.

The instrument is very useful in cases where, owing to faulty technique or mishap, blood or pus enters the trachea, and when stomach contents are inhaled. Its use in children for the instillation of lipiodol has not been investigated, but it may have possibilities. Probably less lipiodol would be needed, with consequently less interference with respiration. Any excess lipiodol could be immediately aspirated.

Messrs. Charles King have arranged to make this instrument for me.

# Reports of Societies

## TREATMENT OF CARCINOMA OF VULVA

At a meeting of the Section of Obstetrics and Gynaecology of the Royal Society of Medicine on May 20, Professor HILDA LLOYD presiding, a discussion took place on the treatment of carcinoma of the vulva.

Mr. STANLEY WAY, of Newcastle-upon-Tyne, said that it was ten years since the subject was discussed in the Society, and in the intervening period there had been considerable changes of opinion. There was an increasing awareness that radium and *x* rays could do little to effect cure of carcinoma of the vulva. The fearful necrosis which so often followed their application, even in reasonable doses, must be well known. It appeared that surgery was the method of choice. No other site, not even excluding the breast, was more suitable for radical surgical attack. Mr. Way then confined his remarks to the extended radical operation which he had practised for the last six years. It involved a very wide removal of the vulva and resection of all superficial inguinal and sub-inguinal lymph nodes. He had devised this extended operation as the result of studies which he was able to make in Newcastle. The results of less radical procedures were not encouraging, and the futility of minor surgery he thought was fully demonstrated. The incidence of lymph-node involvement in 88 cases which he took over while working out his technique was found to be 51%.

Cases in which he had carried out his extended operation numbered just over 60. He had rejected or excluded 11 cases, so that his operability rate was 85%. After 64 operations there were 10 deaths before discharge from hospital, including one after uncompleted operation and one death from cerebral haemorrhage three months after operation. The operative mortality might be considered high, but it must be remembered that these patients had very little hope without surgery. The chief cause of death had been wound infection. He hoped that streptomycin would help in this connexion, but it was certainly not a drug to be used indiscriminately as penicillin was used at present. Only 12 of these cases had been operated on five years ago. The five-year survival rate was 83%; the three-year rate 88%.

Most of the extended operations were done in one stage, and he was very much in favour of this if it could be done safely. He had no wish to minimize the difficulties of the operation if it was to be carried out thoroughly in one stage. The longest time he had taken for the one-stage operation was three hours, the shortest, one hour and 10 minutes. But far more complicated and exacting than the operation itself was the aftercare of the patient.

### Incidence

The Registrar-General's figures, Mr. Way said, showed that about 400 women in England and Wales died from this form of cancer every year. This was almost certainly an underestimate, for often such deaths were returned as due to cancer of the vagina or uterus. He believed that there might well be 600 cases annually, but even this was not a large figure when distributed over the whole country. At the previous discussion in the Section in 1939 Professor F. J. Browne had suggested that, as the disease was not common, all the cases in an area should be sent to one hospital where special interest was taken in such conditions. The speaker had been able to persuade his colleagues in Newcastle to do this, with the result that he had seen 127 cases of carcinoma of the vulva in the last ten years. He had recently written to a number of centres in Great Britain to find out how often carcinoma of the vulva was seen, and he found that in a number of teaching hospitals in London the gynaecological surgeon saw an average of only about one case a year; in provincial centres the average was slightly larger. Whatever method of treatment was employed, one case a year for each gynaecological surgeon would not offer sufficient experience in either treatment or nursing. He concluded by expressing the view that many more cases could be treated surgically than at present.

On the question of incidence, Mr. A. P. BENTALL said that possibly the incidence varied in different parts of the country and it might be that in the eastern counties it was higher than elsewhere. In 1945 in the Norfolk and Norwich Hospital there were 10 cases of carcinoma of the vulva, 11 in 1946, 6 in 1947, and 11 in 1948—an average of 9.5 cases a year out of an average of 707 cases of malignant disease.

Mr. J. B. BLAIKLEY presented an analysis of cases seen at the Chelsea Hospital for Women and the Royal Cancer Hospital during the period 1933–47. Anything like a complete analysis was impossible owing to deficiencies in the follow-up. At Chelsea out of 29 patients treated during this period the number of five-year survivals was 11 (38%). Early cases with no clinical evidence of involvement of the inguinal glands and treated by simple excision numbered 10; of these, 5 patients had died and 1 was untraced, giving a five-year survival rate of 40%. The results at the Royal Cancer Hospital were similar. Out of 49 patients the five-year survivals were 23 (47%); again a number of cases were untraced. Among the early cases treated by simple excision of the vulva or some part of it there were 4 deaths, giving a five-year survival rate of 50%.

The choice in treatment lay between radical surgery and, if the patient was unfit for excision of the vulva, teleradium. In fact, with modern anaesthesia, few elderly women were unfit for surgery. He hesitated to disagree with Mr. Way, but he did not think that in the majority of cases it was necessary to remove the iliac glands, which were involved only very late. He also drew attention to the Stockholm technique, especially a paper by Berven in 1947 on electrocoagulation of the vulva and the application of teleradium to the groin. With electrocoagulation there was surprisingly little shock and pain, and a good deal of sepsis was avoided.

The first general principles for treatment of cancer of the vulva were that the whole vulva must be excised, preferably with the diathermy knife, or else destroyed by electrocoagulation. He preferred the former technique in most cases. The inguinal glands must always be removed. It was possible to start treatment with teleradium one week after excision.

### Radical Excision

Mr. ALAN BREWS said that he encountered very few cases of malignant disease of the vulva, but like Mr. Way and many others he was dissatisfied with the poor results of superficial surgical procedures and with radiotherapy. In recent years he had been practising a moderately radical surgical excision of the vulva, with block resection of superficial and deep lymphatic glands from both groins. He had performed this type of operation 12 times—on an average two or three times a year. He had always used combined spinal and light general anaesthesia. He had used diathermy extensively for all skin incisions, and coagulation for all but the largest vessels. He had aimed at the removal of all superficial inguinal and femoral glands; he had not as yet removed the external iliac gland. He had always removed the upper part of the internal saphenous vein. The wound was kept at rest for as long as possible. Only after three weeks, with healthy granulations everywhere, did he allow the patient up, wearing a loose linen garment. She was then sent to a convalescent home for about six weeks, when healing was usually complete.

His cases were too few and recent for useful statistics, but he thought the results encouraging. He had had one primary death, with very extensive local recurrences within a month of the original operation, but he had had no other serious complications as yet. The absence of pyrexia and serious infection and the complete freedom from pain had been notable. His small series included two cases of malignant melanoma; both died within a year of operation, one with a mass of recurrences in the bladder and the other with widespread visceral secondaries in the lungs and liver. He endorsed Mr. Way's plea for concentration of these cases in a few units where an experienced team would give each patient a greater chance of useful survival. It might be that in each region only one such team would be needed.

After some general discussion, Mr. WAY, in reply, said that he could not help feeling that there was still an element of caution abroad. On the subject of palpable nodes, 36% of his cases in which nodes were not felt in the groin were nevertheless found to have cancer. The Berven treatment relied on the palpation of lymph nodes to ascertain whether or not there was involvement. He had never seen lymph-node involvement respond to *x*-ray or radium therapy. Until the cautious attitude towards the surgery of carcinoma of the vulva was overcome results would not improve. He added that this was a disease which could be practically eliminated by the surgical treatment of leukoplakia beforehand.

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The Minister of Health is worried about the amount of time spent by members and officers of local authorities attending conferences. A letter from the Ministry asks local authorities to send representatives only to those conferences at which attendance is desirable in the interests of the council and that the number sent is no more than is sufficient for this purpose. Save in very exceptional circumstances the Minister would not sanction payment for sending representatives to conferences held abroad. The Minister hopes that councils will use their influence where possible to limit the duration of conferences and to see that they are held in reasonably accessible places.

# Correspondence

### Jenner and Medical Science

SIR,—Sir Edward Mellanby's oratorical contempt (May 28, p. 921) will not suffer him even to name the man whom Bulloch (not Bullock) thought the most learned man he ever knew. Poor Creighton! I must face alone, with such fortitude as I possess, the charges of forming "imbalanced" ("unbalanced"?) and wrong judgments, of having little knowledge of and making little allowance for human nature, and of killing Kruger with my mouth. I do not suppose many people have read my book—it is out of print and likely to remain so. I am not sure Sir Edward has read much of it. I dare say righteous anger led him to cast it aside before he reached my final conclusion that "Jenner was, directly or indirectly, the means of saving many hundreds of thousands of lives"; I added, "That is a less grandiose conclusion than some others have reached, yet, I submit, quite enough to entitle Englishmen to take pride in the recollection that Jenner was their countryman."

However, I still think Jenner was loose-thinking and, ultimately, fact-blind (not fact-blinded, as Sir Edward writes), and to explain how I reached this imbalanced, or unbalanced, judgment will not take much space. In 1798 Jenner wrote to a foreign physician: "At present I have not the most distant doubt that any person who has once felt the influence of perfect cowpox matter will ever be susceptible of that of smallpox."

As Sir Edward so rightly says, we must judge a man by what was known, or probable, when he wrote, not by what later experience proved. When Jenner wrote, it was known that natural smallpox did sometimes attack inoculated persons, and instances of two attacks of natural smallpox in the same person had been recorded. It was, I suggest, loose thinking to infer from his experiments that the new prophylactic was more efficient than the "natural" prophylactic. He might reasonably have hoped that it was equally efficient and less dangerous.

It was, I suggest, to be fact-blind to have written a quarter of a century later, after all that had happened:

> "My opinion of vaccination is precisely as it was when I first promulgated the discovery. It is not in the least strengthened by any event that has happened, for it could gain no strength; it is not in the least weakened, for if the failures you speak of had not happened, the truth of my assertions respecting those coincidences which occasioned them would not have been made out."

Sir Edward tells us that "the test of the acceptability of a discovery depends upon whether it is true and not whether it seems sensible or even whether it can be verified by the statistician." Or, in other words, a discovery is acceptable if it is a discovery. Certainly many discoveries—e.g., in the field of ethics—cannot be verified by statisticians, or even by biochemists, but is the discovery of a prophylaxis one of them? Pearson and Woodville in Jenner's time did not think so; the Medical Research Council in our time does not seem to think so.—I am, etc.,

Loughton, Essex. MAJOR GREENWOOD.

### Treatment of Basal-cell Carcinoma

SIR,—In our article in the *Journal* of April 30 (p. 737) we stressed in the title the "especial reference to lesions on the neck, trunk, and limbs." For this reason we made no further reference to the 210 cases in which the tumour was situated on the face or scalp.

It is as a primary treatment of rodent ulcer that we especially recommend surgical excision. The following two tables are compiled from the personal case records of one of us (C. W.). They refer to basal-cell carcinomata on the face and scalp treated between 1915 and 1935: a complete "follow up" was conducted in 1938.

The first table shows the results of surgical excision as primary treatment of rodent ulcer; they are surely better than those shown by radiotherapy. The statement that "there should be no recurrence with adequate surgical excision" is

TABLE I.—*Results of Treatment by Primary Excision*

| | No. of Cases Treated | Not Traced | Died of Inter-current Disease | Recurred | Recur-rence Free | Percentage Free from Recurrence |
|---|---|---|---|---|---|---|
| Patients treated between 1915–1925 | 51 | 18 | 10 | 1 | 22 | 96% |
| Patients treated between 1925–1935 | 62 | 20 | 16 | 0 | 26 | 100% |

TABLE II.—*Results of Treatment by Excision Following Failure of X-ray Treatment*

| | No. of Cases Treated | Not Traced | Died of Inter-current Disease | Recurred | Recur-rence Free | Percentage Free from Recurrence |
|---|---|---|---|---|---|---|
| Patients treated between 1915–1925 | 25 | 10 | 4 | 5 | 6 | 54% |
| Patients treated between 1925–1935 | 35 | 14 | 7 | 8 | 6 | 43% |

more than an "expression of hope." If the excision is adequate there is no pathological basis for recurrence—all the tumour cells have been removed. Professor D. W. Smithers's figures (May 14, p. 865) show how difficult it is to eradicate all the tumour cells by radiotherapy.

The second table illustrates one of the special hazards of radiotherapy. Recurrences following *x*-ray therapy as the primary treatment are much more difficult to eradicate. Further recurrences are only too liable to occur. This is the sort of case that Professor Smithers will pass over to the surgeons. Perhaps this is what Professor Smithers means when he says, "Surgeons and radiotherapists do better by working together." In many fields we are only too ready to agree with him, but not in the treatment of basal-cell carcinoma.

We do not agree that irradiation gives a better chance of cure in lesions on the eyelids. Surgical excision will cure the patient, with far less chance of recurrence than irradiation. In the past irradiation produced a good cosmetic result more often than surgery; but with the development of plastic surgery the cosmetic results of surgery can now compete with those of irradiation.

So often, and Professor Smithers's figures show how often, irradiation results in delay in cure and makes further treatment more difficult. Therefore we recommend that all rodent ulcers should be excised when first seen. And if the patients are "worried" they may be "premedicated," for it is worth curing them at their first treatment.—We are, etc.,

CECIL WAKELEY.
PETER CHILDS.

London, W.1.

SIR,—On reading the recent correspondence concerning the treatment of rodent ulcer I was reminded of an interesting case, a female mental patient, who was admitted to hospital at the age of 51 in 1938.

At this time she showed a pale scar in the left infra-orbital area of the face about which she was unable to give any information, and as there were no signs of any pathological activity it was ignored. Towards the end of the year 1944 a new lesion was observed, this time on the forehead over the left eyebrow, but it showed little reaction and did not appear to warrant much closer investigation. However, its chronicity led to the calling of a consultant, who diagnosed rodent ulcer in 1947, and radium therapy was prescribed. This was carried out in the Christie Hospital, Manchester, the patient visiting for sessions of treatment once a month, commencing in September, 1947.

In December of that year a third ulcer appeared in the right infra-orbital region, and therapy was applied to this also. In January, 1948, the irradiation produced a conjunctivitis and blepharitis on the right side necessitating local palliative treatment, and the sessions were discontinued temporarily. In March, 1948, a further lesion appeared on the left side of the nose, which was watched carefully; surprisingly it regressed, and healed of its own accord. In June, 1948, the lesion over the left eyebrow succumbed to a simple pyogenic infection, which was treated locally with gentian violet with success, and in September the irradiation therapy was discontinued, as the ulcers had healed.

The patient has been examined by the consultant at three-monthly intervals since, and no further activity has been observed, nor has there been any glandular involvement up to March, 1949. She will be seen again in June, but the prognosis is considered very good.

The interesting point about this case seems to be the recurrence of the same disease in different but close areas, and the possibility of minute traces of active pathological tissue being still *in situ* after apparent healing gives rise to the suspicion that direct spread has insidiously taken place. The directions of spread are such as to make this supposition improbable, so that one is forced to assume each lesion was a neo-neoplasm *per se*. Perhaps some reader might clarify this point.—I am, etc.,

Winwick, Lancs. P. A. M. ROBERTSON.

## Penicillin-resistant Staphylococci

SIR,—Dr. N. G. B. McLetchie (April 23, p. 725), in criticizing our use of the word "strain," has raised a matter of general interest. He appears to wish to limit its use to that usually given to "type."

The word appears to have two slightly different meanings, both of which may be used without ambiguity. This was done by Dr. G. Martyn (April 23, p. 710), who writes, "The high incidence of penicillin-resistant strains probably reflects the strain circulating in the hospital." Here strain in the second place bears the meaning "kind" or "sort" and suggests that had typing methods been available the circulating strains might have belonged mainly to one particular type.

Allison and his colleagues use "strain" in a quite different sense from "type"—a type including many strains from different patients. In summarizing an outbreak of staphylococcal food-poisoning these authors state that "the 125 strains submitted or isolated were typed by serological and bacteriophage methods. . . . 113 belonged to the serological type III, phage type 6/47" (*Mon. Bull. Min. Hlth*, 1949, **8**, 38).

It is legitimate to regard any single organism on a swab as potentially a strain, just as in horticulture each individual seedling in a stand may give rise by vegetative propagation to a clone. It is here that difficulty arises in comparing the figures given by different authors. While one worker may accept into a series several strains from swabs and cultures from different parts of the body of a single patient, another will add only one to his collection. The figures will then require very careful analysis if a comparison is to be made.

We have taken a total of 315 strains from 241 persons. This in practice means that each patient gave at least one strain and sometimes two. The second was added if some definite difference in colonial appearance could be observed and reproduced in subculture, or if some definite difference in penicillin sensitivity or in coagulase production were present.—We are, etc.,

A. VOUREKA.
W. HOWARD HUGHES.

London, W.2.

## Transfusion Compatibility Tests

SIR,—A recent case observed at hospital illustrates how an error in rhesus grouping, together with reliance on the saline compatibility test, led to the administration of rhesus-positive blood to a rhesus-negative individual previously immunized by repeated blood transfusions.

A man aged 34 had suffered from ulcerative colitis since 1944. On four previous occasions 19 pints (10.8 litres) of group A blood had been transfused without any reaction other than mild pyrexia without rigor; on the last occasion the temperature after transfusion had reached 102° F. (38.9° C.), and a mild asthmatic attack had occurred. On April 6, 1949, the patient was again admitted for transfusion. An experienced laboratory technician recorded his blood group as A rhesus-positive, and accordingly a compatibility test using patient's serum and donor cells suspended in saline only was employed. This showed no incompatibility after one hour at 37° C. The blood was accordingly issued as compatible. After about 50 ml. had been transfused the patient experienced a rigor and complained of severe throbbing headache with pains all over his body. The temperature rose to 102° F. (38.9° C.). In view of this reaction the ward sister stopped the transfusion after 150 ml. of blood had been given. Recovery was uneventful. The following day a sample of patient's serum was again incubated with the donor cells, after which an indirect Coombs test was done. This showed very strong agglutination of the donor erythrocytes. Subsequent investigation showed the patient to be in reality rhesus-negative, and his serum to contain anti-Rh (anti-D) blocking antibody active against the cells transfused in a dilution of 1/80. The donor cells suspended in 25% bovine albumin were strongly agglutinated at 37° C. by his serum

within five minutes. On April 11 the titre of the antibody had risen to 1/5120.

This case strongly endorses the plea made by Drs. B. Godwin and A. J. McCall (May 14, p. 870) that all compatibility tests should be made as a routine with the donor cells suspended in bovine albumin. Had this been done in the above case the error in rhesus grouping would have been easily detected and the false sense of security engendered by the erroneous rhesus test on the patient would have been rapidly dispelled. Now that 30% bovine albumin is available commercially in this country it would seem to be the duty of all pathologists and transfusion officers to abandon the time-honoured but fallacious saline compatibility test.—I am, etc.,

Worcester. P. KIDD.

SIR,—Many will disagree with the statements made by Drs. B. Godwin and A. J. McCall (May 14, p. 870). The case reported by Drs. A. C. Buchan and John Wallace (April 16, p. 660) can hardly be said to illustrate the danger attending the use of saline cell suspensions in a direct compatibility test. There is no evidence that albumin-agglutinating antibodies were present in the circulation before the transfusion : and even if they were it is by no means certain that they would have been detected by a rapid compatibility test using an albumin cell suspension.

What it does illustrate is the danger in omitting to test the patient's Rh type. Had this test been done there should have been no transfusion reaction, since Rh-negative blood would presumably have been administered.

Any *rapid* direct compatibility test is likely to prove "unsatisfactory and dangerous" if too much is expected of it. Such a test should provide a safeguard against gross technical or clerical errors—e.g., a mistake in ABO grouping or the wrong label on a bottle of blood—errors happily rare and, indeed, rarer than those inherent in the compatibility test itself. It is not, however, an adequate test for detecting Rh antibodies and will often fail to do so.

Thousands of tests on pregnant women carried out in this laboratory, using Diamond and Abelson's technique in parallel with the standard tube and Coombs techniques, have shown that while the first is an excellent rapid method of ABO grouping and Rh typing when potent antisera selected for the purpose are employed it not infrequently fails to reveal the presence of Rh antibodies even when sensitive cell suspensions are used. It will fail more often in direct compatibility tests, where one is dealing not only with antibodies of unknown potency and speed of reaction but with stored cells of unknown sensitivity.

Nearly all dangerous transfusion reactions, not due to ABO incompatibility, occur in Rh-negative (D-negative) persons, and these can be avoided by D-typing and transfusing Rh-negative blood. In urgent cases the method of Diamond and Abelson is satisfactory for this purpose : and since supplies of suitable anti-D sera are available there is little excuse for failing to carry out a test of this kind before blood transfusion is undertaken.

The problem of the rare Rh antibodies occurring in D-positive persons, and the still rarer anti-Kellecher and anti-Lutheran, is not solved by the albumin compatibility test. Such a test, if carried out in the hope of detecting rare antibodies in cases requiring urgent transfusion, might well be confined to those with a history suggestive of immunization (transfusion or pregnancy) or where no history can be elicited. And its limitations must be appreciated. In the case of planned transfusions more accurate and sensitive techniques would naturally be employed.

It cannot be emphasized too strongly that D typing is of prime importance and should never be omitted. By the use of this test Rh-negative blood will be conserved, dangerous immediate reactions due to the presence of anti-D eliminated, and the more remote but equally real danger, so often ignored, of immunizing patients against the D factor will be avoided.

Drs. Godwin and McCall state : "The use of a satisfactory compatibility test is therefore a more important safeguard against *dangerous* reactions than is routine Rh testing with a limited range of sera, for only in this way can the reactions due to the rarer Rh antibodies and other irregular agglutinins be avoided." If this is taken to mean that D typing can be omitted provided the direct compatibility test recommended by them is carried out, those who follow this advice will be casting away the substance for the shadow, and the artificial immunization of Rh-negative persons will still continue.—I am, etc.,

Blood Transfusion Centre, Sheffield. R. H. MALONE.

## An Unfortunate Precedent

SIR,—Dr. A. P. Cawadias (May 21, p. 910) refers to the appointment of the President of the Royal College of Physicians to the Awards Committee as not an "unfortunate precedent." Later on in his letter he states, "As in the course of centuries the College changes its mode of action, abandoning its academic ivory tower, it has to come more into the open struggle." Surely the "unfortunate precedent" is in reality this fact, and that the College has seen fit in doing so to act in a manner in direct opposition to the expressed desires of the whole medical profession ; in consequence it has lost in some degree the respect and confidence of the profession.

The College of Physicians is a very specialistic body, and as such should not presume to meddle with professional administration, which requires wide knowledge and practical experience of affairs not to be gained by the examination and training necessary for acquiring a specialistic diploma.—I am, etc.,

St. Mawes, Cornwall. B. H. SHAW.

## Curare-modified E.C.T.

SIR,—Dr. S. J. G. Spencer says (May 14, p. 869) that the dosage of *d*-tubocurarine chloride used by us is "dangerously high," but mentions no danger other than respiratory arrest. Our purpose in mentioning the prolonged periods of apnoea which we have occasionally encountered was to show that we do not consider this to be a serious danger if an adequate method of artificial respiration with oxygen, such as we describe, is at hand.

The disadvantages of giving 5 mg. of tubocurarine at two-minute intervals seem to us to outweigh any possible benefit. He states that his method produces "adequate muscular relaxation without severe respiratory depression." Adequate for what purpose ? The patients whom we treated had physical illnesses which make an insufficiently modified convulsion a much greater potential danger than hypersensitivity. It takes eight minutes to inject 20 mg. *d*-tubocurarine chloride by his method. Slow injection of this drug is stated to increase the danger of bronchospasm ; its effect on an agitated, uncooperative, depressed patient seems to us to make the treatment unnecessarily unpleasant. The same quantity of the drug injected quickly will not have the same effect as when injected slowly. We agree that the correlation between weight and effective dosage is low, and we now use a standard initial dose of 18–20 mg. for females and 25 mg. for males. This is varied occasionally when the physical condition would make greater modification desirable.

Dr. Spencer does not say why he considers "it is important to reach by calculation the correct end-point with thiopentone." Rapid administration of 0.25 g. of thiopentone ensures unconsciousness in every patient, while the (remote) danger of prolonged respiratory arrest is adequately guarded against by the Lucas respirator. The method he describes is more time-consuming. We do not use neostigmine as a routine, because of its unpleasant side-effects. Artificial respiration is always carried out by a doctor and with a Lucas respirator is an easy procedure.

We should like to add that since our report we have treated another fifty cases of a similar character with no casualties, and also to refer Dr. Spencer to the large number of cases treated by Drs. Hobson and Prescott,[1,2] to whom we are grateful for our knowledge of the technique we have described.—We are, etc.,

Shenley, Herts. P. D. W. SHEPHERD. D. C. WATT.

REFERENCES

1 *British Medical Journal*, 1947, 1, 445.
2 *Lancet*, 1949, 1, 819.

## "Death Following Abortion"

SIR,—Will you grant me space to comment on a report (May 7, p. 825) and to correct any misapprehensions which may arise from it? Is it correct to head the report "Death Following Abortion"? The certificate from the general practitioner stated that the patient was pregnant about five months. On examination I formed the opinion that the pregnancy was approaching the twenty-eighth week, and sent her into the nursing-home for induction of premature labour.

The patient was referred by the G.P. to the psychiatrist, with a letter stating that she was mentally disturbed and suicidal. She was referred to me by the psychiatrist, who sent me the G.P.'s original letter, together with a letter from himself saying: "I am perfectly satisfied that her pregnancy should be immediately terminated." Some hours later he sent a detailed report stating: "I consider that it is absolutely essential to terminate this pregnancy, even although it is advanced, to safeguard this young woman's mental stability." I was informed that she had already attempted suicide, but that her mother had unexpectedly arrived in time to rescue her. On the basis of the two medical reports, and the impressions I formed when I saw the mother and the girl, and examined the latter, I decided that immediate termination of the pregnancy was indicated, whether or not the child was viable.

It was not until the inquest, eleven days after the patient's death, that I learned that the matron was not a registered nurse. The certificate of registration of the nursing-home hangs in the entrance hall, and I presumed that the matron herself was registered.

The fact that death did not take place till ten or fifteen minutes after the operation was not only "suggested by the matron," as stated in your report. This was stated on oath by both the anaesthetist and myself.

The Home Office pathologist stated in evidence that an operation of this kind could be carried out at a public hospital, under the National Health Service, without any cost to the family of the patient. That is true. So could any other surgical operation. So could all the operations, of any kind, that are carried out in all the private nursing-homes in the country. But many patients who can afford to pay private fees prefer to have a doctor of their own choice and the amenities of a private nursing-home.—I am, etc.,

London, W.1. NORMAN HAIRE.

## The Lock Hospital

SIR,—It is difficult to entertain with even a modicum of seriousness the idea of closing the National Gallery and transferring the pictures that hang therein to the foyer of the Odeon Cinema. I feel that I am one of the very few who can speak upon the subject of the London Lock Hospital with both a knowledge of, and a disinterest in, the subject. I have been a medical officer in the Lock, but my material association with it terminates within a matter of days.

The Lock is not without a few of the many faults possessed by every hospital. It is served by some doctors who have a wealth of experience not known elsewhere, and by some venereologists whose ability is indisputable; it is also served, and this may be looked upon as one of the hospital's few faults, by some general surgeons whose interest in venereal diseases is secondary. But why pull down a house when the installing of electricity would perfect its structure?

As a teaching centre the Lock has facilities and clinical material which makes it unsurpassed and insurpassable. And the patients—a minor detail—what of them? They range socially from the highest to the lowest, from the stage to the street, from the sublime to the pediculous. Are they to be consulted? It is a simple matter to take one's spirochaetes around the corner to another clinic—but confidence lacks the motility of the spirochaete, and the confidence of the patients in the Lock is one of the most striking aspects of the hospital. Many patients have been attending for sixty years; the fact that they still attend, indeed the fact that they still live, is testimony of the highest worth. The Lock was not built in a day: to it all roads lead. Let wisdom prevail!—I am, etc.,

London, W.1. RAYMOND OLIVER.

## Treatment of Rheumatoid Arthritis

SIR,—I was interested in the leading article (May 7, p. 812) on a new treatment for rheumatoid arthritis. In 1927 the hospital to which I was attached was seeking information regarding the value, if any, of ultra-violet light in the treatment of tuberculous arthritis in children. Attention was drawn to some similarity between certain of the cases and Addison's disease, and it was decided to give whole suprarenal gland to certain cases. The clinical improvement in the first case so tried was so startling that I have always been convinced that there was here a line for further research.

Schafer[1] suggests that the suprarenal capsules have what he calls an "antitoxic" property. The improvement in a series of eleven cases was not so convincing, but was not exactly negative. The work was controlled by blood sedimentation rates, etc.; it was published in the *Archives of Disease in Childhood* (1929, **4**, 47).—I am, etc.,

Ormskirk, Lancashire. JOHN D. CRAIG.

REFERENCE

1 *Endocrine Organs*, 1924, London, p. 93.

SIR,—Your timely leading article (May 7, p. 812) speaks of a "waning of belief in an all-important infective factor" in the aetiology of rheumatoid arthritis. With all due respect to the belief of others, may I as one who for nearly thirty years has devoted himself to the intimate study of rheumatism reiterate my often expressed view that the role of infection in the causation of rheumatoid arthritis is a very important one?

Years ago I drew attention[1 2] to certain clinical aspects of rheumatoid arthritis which in my opinion point quite clearly to an infective origin. Consequently I laid down certain therapeutic principles (systematically carried out and strictly observed rest, nutritional treatment, etc.) which soon found general acceptance and stood remarkably well the test of time ever since. In the course of years I saw many thousand patients who had been either completely cured or at least saved from permanent crippledom with the help of treatment on these lines. It was thus possible to demonstrate the "reversibility" of rheumatoid arthritis more than twenty years ago.

It is therefore quite impossible for me to understand why it should be "difficult to harmonize the microbic theory of rheumatoid arthritis with modern knowledge." One has, of course, to bear in mind that rheumatoid arthritis is a disease of complex character and of multiple origin. In a small monograph[3] I stressed the point that in addition to infection other aetiological factors have to be considered. In this connexion I was much impressed by the fact that certain types of rheumatoid arthritis could be found almost exclusively in young females and others in women in or near the menopause. Nor did I fail to notice the striking differences in the clinical picture of rheumatoid arthritis according to the age of the patient ("growing pains" of early childhood with little or no changes in the joints and practically never a raised temperature; very marked swellings of the joints and tendency to higher temperature in adults; slight clinical changes without high temperature but coupled with extreme painfulness of the joints in old patients). All these facts have clearly pointed to a certain correlation with, and an involvement of, the endocrine glands. It was logical to assume that the disturbed correlation of these glands and the resulting biochemical changes must play a very important part in the pathogenesis of the disease.

It is therefore erroneous to say that "the disease is part of a basal biochemical disturbance of unknown type." In reality "the basal biochemical disturbance" forms part, but one part only, of this complex disease. The fact of the matter is that the two main causative factors, infection and endocrine disturbance, under the additional influence of climate, environment, occupation, etc., bring about an almost capricious variety of clinical picture in rheumatoid arthritis; but in every case it is the impact of the infection which "starts the ball rolling."

In the interplay of the two main aetiological factors the bacterial toxins are playing the role of the "noxious agents" which Selye and others found lately to be able to produce a "general adaptation syndrome." These experiments are really just another proof of the correctness of the "microbic" theory.

The complex aetiological origin of rheumatoid arthritis makes it obvious that no unilateral therapeutic approach can ever yield satisfactory results, and I never missed an opportunity of pleading for a multilateral one. Impressed by the fact that patients suffering from rheumatoid arthritis—if there is no complication by other disease—have almost invariably low blood pressure (in contrast to cases of gouty arthritis, who almost invariably display high blood pressure), also bearing in mind the always present derangement of the internal secretory balance of these patients, for more than fifteen years I used to administer systematically natural anterior pituitary and adrenocortical extracts and have found these hormones to be very effective in the advocated multilateral therapeutic approach.

On the other hand, having seen during thirty years many "new treatments" emerge triumphantly and also disappear "unwanted and unwept," I hope to be forgiven if I utter a word of caution. One must realize that every therapeutic principle—powerful as the action may be within its own sphere—can be effective in one definite direction only, and must of necessity be inadequate to deal with a complexity of pathological factors, as represented in the aetiology of rheumatoid arthritis. When planning treatment for a case of rheumatoid arthritis it will be always necessary to assess and evaluate the *ad hoc* composition of the aetiological mosaic and to arrange the therapeutic arsenal accordingly. As far as I can see—*ut falsa vates sim*—there will never be a "blue print" for the treatment of rheumatoid arthritis, the successful treatment of which for a long time to come will require much special knowledge and circumspection from the physician.—I am, etc.,

London, W.1. L. SCHMIDT.

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## Morton's Metatarsalgia

SIR,—In the introductory sentence of the annotation on Morton's metatarsalgia (May 14, p. 858), there is an implication that T. G. Morton was the first to describe this syndrome in 1876. Possibly some of your readers may be interested in the following:

"Another form of neuralgic affection occasionally attacks the plantar nerve on the sole of the foot, between the third and fourth metatarsal bones, but nearest to the third, and close to the articulation with the phalanx. The spot where the pain is experienced can at all times be exactly covered by the finger. The pain, which cannot be produced by the mere pressure of the finger, becomes very severe whilst walking, or whenever the foot is put to the ground.

"Relief can only be afforded by the application of lateral compression, a strip of plaster about an inch wide being drawn tightly over the foot and round the sole. I believe this application acts by drawing the metatarsal bones closer, and thus affording protection to the affected nerve, which, when the parts are capable of expansion, is more exposed to pressure."

This occurs on page 52 of *A Treatise on Corns, Bunions, the Diseases of Nails, and the General Management of the Feet*, by Lewis Durlacher, Chiropodist to the Queen, and published by Simpkin, Marshall and Co. in 1845, thirty-one years before Morton published his description.—I am, etc.,

London, S.W.3. C. E. KEMP.

## Thiosemicarbazone

SIR,—In the many various publications about tuberculosis there is no mention of the drug thiosemicarbazone. This is a new compound suggested by Professor Domagk, of Wuppertal, Germany, for the chemotherapy of tuberculosis. While serving with the R.A.M.C. in Germany I attended the congress of the West German E.N.T. specialists at the University of Bonn. Professor Domagk (inventor of "prontosil") was the main lecturer. He gave a detailed account of his experiments in the treatment of tuberculosis with thiosemicarbazones. He did not disclose the formula of the compound.

Following his lecture, papers were read by clinicians from various medical centres where this drug is used experimentally for treatment. A report from the clinic for the treatment of lupus in Münster stated that the new drug cured lupus in a short time. A professor of otolaryngology reported his experience in treating laryngeal tuberculosis with thiosemicarbazone. Dysphagia disappeared in 3–4 days after the commencement of treatment, even in the very severe cases. Treatment of pulmonary tuberculosis was disappointing so far.

There is little we can learn nowadays from German medicine, which is unbelievably backward. But there are a few things of importance, and it may be useful to know more about them. It is a great pity that so many British doctors now in Germany with the R.A.M.C. make such little use of their stay there from this point of view.—I am, etc.,

Norwich. L. FISH.

*** An abstract of a paper on thiosemicarbazone by Professor Domagk (*Nord. Med.*, 1948, **39**, 1322) appeared in *Abstracts of World Medicine* (Feb., 1949, p. 246).—ED., *B.M.J.*

## Treatment of Varicose Veins

SIR,—I cannot let this correspondence pass without putting in a good word for injection therapy. I feel that letters on any subject in your columns should be helpful rather than condemnatory, and that it would be a pity if such an excellent method of dealing with varicose veins should be damned either by a theoretical bogy of deep thrombosis—which I have never seen—or by the charge of almost certain recurrence.

I have been injecting varicose veins for over nineteen years, and have done well over 20,000 injections, of which I have regretted only a few. Five out of six of my patients come to me or to my clinic at Battersea Central Mission on the recommendation of former patients whose varicoses I have completely cured to their own satisfaction. I even injected my own varicose vein three years ago, and to-day there is not a sign of what was a very large and twisted varix.

I think that the secrets of success are: (*a*) inject as high as possible; (*b*) inject very rapidly with the leg in a horizontal position and sweep the wave of sclerosing fluid down the vein and into its tributaries with the hand (this needs considerable practice and confidence); and (*c*) always apply a compression bandage, usually of the adhesive type, and keep this on for a fortnight. In certain cases this means strapping the limb from the foot to the thigh, or at least as high as the upper limit of the varicosity.

It would be useless to deny that in a small proportion of cases there is a recurrence due to recanalization. But this occurs quite early—usually within six months—and it will be found that the vein wall is thickened and that a second injection, made with the same precautions, will produce a lasting hard sclerosis, and that the offending vein will disappear completely in a few months.

Recurrences also occur after ligation, and quite a number of my patients have had the Trendelenburg operation done previously. But I do not on that account condemn the operation, and it may be that a combination of both methods would result in fewer recurrences than either alone. Finally, let each continue to practise and try to perfect his own technique, and if his results are good he will have no lack of a steady flow of well-satisfied patients.—I am, etc.,

London, S.W.7. R. SIMPSON HARVEY.

## Dried Plasma for Domiciliary Midwifery

SIR,—Even in these days of antenatal clinics and *x* rays cases of unexpected twins continue to occur in general practice. I recently saw such a case, and found myself delivering uniovular twins in a bedroom at night.

Both arrived without difficulty, but in the third stage there was considerable post-partum haemorrhage due to atonic non-detachment of the placenta. Manual removal was not feasible, and it was then that I was truly thankful that I had with me a supply of plasma to give without delay. Resuscitation, combined with ergometrine, was successful, and the placenta was eventually removed in hospital the next morning. All three are doing well.

May I suggest that all who practise domiciliary midwifery should carry with them a special bag containing at least two pints (1.1 litres) of dried plasma, the necessary sterile water, and a giving set? May I also suggest that midwives should carry plasma and be trained to give it? And it should, of course, be a stock possession of every maternity home.

I am a firm believer in analgesia, but if I had to choose between having a gas or trilene apparatus for the comfort of my patient or a supply of plasma for the safety of her life I should undoubtedly select the plasma. Furthermore, I believe many more women would volunteer to give their blood to the banks if they knew it would be devoted to making plasma for obstetric emergencies in the home. Because of recent political arguments, the general public knows how important analgesia in childbirth is considered. The provision of dried plasma for domiciliary midwifery is, in my opinion, of even greater urgency.—I am, etc.,

Herne Bay, Kent. C. T. H. WHITESIDE.

## Reform of Mental Hospitals

SIR,—I have read the review (April 30, p. 761) by Dr. Edward Glover of Mr. H. G. Woodley's book on the above subject with considerable interest. The review starts off with the phrase, "No doubt there is a good case for the reform of institutional psychiatry," and concludes, "In fact the main virtue of the book is that the author attempts, however unsuccessfully, to do what would be much better done by psychiatrists themselves, if only they were so disposed."

This is the root of the problem. Mental patients are inarticulate, and even when they recover and become articulate their appeal is discounted as being that of persons lacking in judgment; while unfortunately those who are in charge of large mental institutions naturally tend to accept things as they are, and the spirit of radical reform is conspicuous by its absence from the recommendations of the great majority of those who have the care of our unfortunate mentally sick brothers and sisters.

It would be of considerable interest to know how much the National Health Service expends per head on those who are physically ill and how much we spend per head on those who are mentally ill. I feel sure that if the figure were known the public conscience would be startled by the abyss between our concern for the ailing in body and those who are ailing in mind.

The root-and-branch reform of our mental institutions is long overdue, but it will not come until the public conscience is aroused to the urgent need for classification and individual treatment of mental patients in a much greater number of units far smaller in size than the great barracks where to-day all types and degrees of mentally sick persons are herded together for mass control.—I am, etc.,

Wrexham, Denbighshire. CYRIL O. JONES.

## Paediatrics and Family Practice

SIR,—We are very glad that Professor W. S. Craig, Dr. F. Charlotte Naish, and Dr. M. F. G. Buchanan (May 7, p. 801) are attempting to bring the medical student into touch with the problems of family practice. At the same time we fear their initial premise "that the instruction of the medical student is concerned primarily with the training of the family doctor" will not go uncontested. The Medical Curriculum Committee of the B.M.A. states bluntly, "The object of undergraduate teaching is not to train general practitioners, but to provide the student with a foundation for his later career in any branch of medical practice," and it can count on weighty support within the profession.

Yet, lacking a clear directive principle, the insatiable curriculum daily devours apace, threatening the efficiency and zest of teacher and student alike. The nature of this principle is perhaps the most important issue in medical education to-day. As teachers, we frequently ask ourselves the question, "What exactly are you trying to do?" and more and more we are inclined to answer with Professor Craig and Drs. Naish and Buchanan, "To train a family doctor." Once this view is accepted an effective principle of integration is introduced in the curriculum.

We are now trying to discover the amount and kind of disease in children encountered by practitioners in different kinds of practice, and Dr. Naish could probably help us on this point straight away. With this information added to out-patient and ward experience we shall be able to see the paediatric needs of the family doctor in better perspective and arrange our teaching accordingly. Further, deliberate practitioner training would also permit a more precise answer to the fundamental question which any reform of the curriculum must raise—namely, What should be considered undergraduate and what postgraduate subjects? Nor does this apparently utilitarian approach deprive the student of that basic foundation which the B.M.A. Committee rightly desires. "Medical education, like all education, is primarily an appreciation of method, and secondly a knowledge of fact," and a variety of subjects can provide material equally suitable for the development of that appreciation.

In this department we are engaged also in studying a number of common disorders in childhood as they present to the family doctor, and we are increasingly impressed by the refreshing effect that this has on our work and teaching. What is more, the consistent appreciation of the students during the past two years has convinced us that their essential curiosity and zest for learning have not been weakened by our preoccupation with those common disorders which will be the concern of the majority for the rest of their lives.

The need is not to give the student just a glimpse of yet another clinic, but rather to give him substantial contact with the day-to-day work of family practitioners. We understand that for some time the Edinburgh Medical School has used the domiciliary practice in this way, and their observations would be very welcome. Valid assessment of the success or failure of this method cannot be made quickly; it will be shown in the rising or falling standard of family practice in the years ahead. For this reason we should set little store on the immediate comments of the students or the apparent toleration of their presence by the patients. There is need for careful preparation, experiment, and prolonged observation in this matter. With these reservations, we would like to join with Professor Craig and Drs. Naish and Buchanan in their plea for the fuller use of family practice in undergraduate teaching, and we hope their paper will promote fresh consideration of this important question.—We are, etc.,

S. D. M. COURT.
Newcastle-upon-Tyne. F. J. W. MILLER.

SIR,—I read with great interest the article by Professor W. S. Craig and Drs. F. Charlotte Naish and M. F. G. Buchanan entitled "Instruction of the Medical Student in Paediatrics" (May 7, p. 801). When I entered my present practice in a working-class district of London in 1937 I found that I seldom saw an infant or young child unless he was acutely ill. Many of my patients were so poor that they waited until their children were very ill indeed before consulting me. I therefore encouraged them to join the London Public Medical Service, in order that, by paying a few pence a week, they would be entitled to medical attention whenever necessary.

Early in 1938 I started to hold my own children's clinic one afternoon a week, which my P.M.S. patients were urged to attend as part of the service. Except for my four years' absence in the Forces, the Clinic has been held regularly ever since. The work done is practically identical with that described by Dr. Charlotte Naish in her own clinic—examination and weighing of infants, advice on infant feeding, vaccination, and immunization, and discussion of general health and behaviour problems. Careful records are kept of each case.

I find the mothers most appreciative. They prefer the intimate atmosphere of their own doctor's consulting-room to the rather impersonal one of the infant-welfare centre. Moreover, if I am called in to a sick child my work is made the easier by the fact that I know the family, and mine is a familiar face to the child.

Nevertheless, there is one problem which I should be interested to know if Dr. Naish shares. Despite the fact that I stress the importance of regular routine examination I find that when the infants reach the age of one year it is almost impossible to persuade the mothers to bring them to the clinic regularly. Whether because of lack of time or because of diffidence in troubling the doctor, older infants and children are rarely brought to see me unless they appear unwell.

I was, however, most gratified to read of the work being done by Dr. Naish and her partners. My colleagues have often made me feel that my interest in positive health in paediatrics was an amiable eccentricity and that such work belonged rather to

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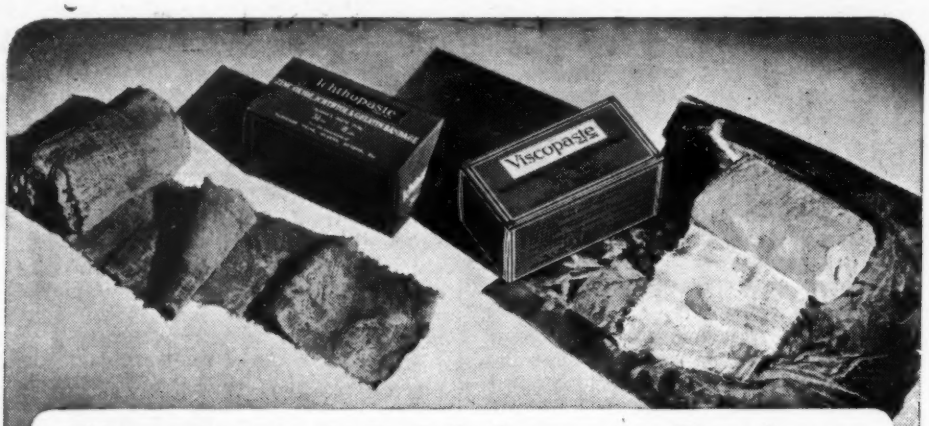


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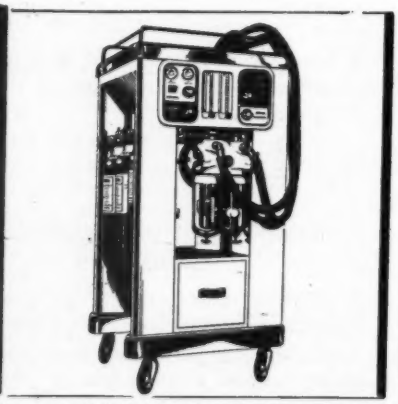

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the province of the local health authorities than to that of general practice. To learn that I share the views of such well-known paediatricians is indeed encouraging.—I am, etc.,

London, W.6. B. ROSEFIELD.

### Routine Medical Examinations

SIR,—I read with interest Dr. M. E. M. Herford's admirable letter (May 14, p. 870) entitled "Routine Medical Examinations." He has not mentioned one use of the examination with regard to prospective employees which is, I consider, of great importance. It is that the examination, when accompanied by a full health history of the applicant, enables a Pulheems system to be used. This system may be either that used in the Army (see the *Journal* of Jan. 15, p. 83) or one which the industrial medical officer has compiled as specially applicable to the industry with which he is concerned.

It is then possible to make a recommendation to the personnel department with regard to the job (or jobs) which the applicant is fitted best to fill. This ensures the most economical use of the man's labour, and guards him against any industrial hazard which might be specially dangerous to him in view of any departure from the normal in his physical or mental state.—I am, etc.,

London, S.W.7. R. FRANK GUYMER.

### Death Following Neostigmine

SIR,—Just before reading Professor R. R. Macintosh's note (May 14, p. 852) on death following injection of neostigmine, sudden death occurred under very similar circumstances, on the operating table, in a patient whom I was anaesthetizing.

A deeply jaundiced woman of 62 was being operated on for the relief of common bile-duct obstruction. The anaesthesia was "kemithal" 1 g., *d*-tubocurarine 25 mg. in divided doses, and 50% nitrous oxide and oxygen. Assisted respiration was maintained throughout.

There were a few cardiac irregularities during the operation, which lasted about 60 minutes, but otherwise nothing of note. Some cyclopropane was given at the end of the operation to afford complete relaxation for the sewing up of the peritoneum. The patient's condition was satisfactory.

When this was finished 2 mg. of neostigmine mixed with 1/100 gr. (0.65 mg.) of atropine was injected intravenously. A short while after this the patient quite suddenly became grey and pulseless. The abdomen was reopened very rapidly and cardiac massage was performed, together with the usual remedial measures. No response whatever was obtained.

At necropsy the operation area was perfect, and the only finding was said to be a very poor myocardium.

This, of course, was highly unsatisfactory and disturbing from the anaesthetist's point of view, and in view of Professor Macintosh's case I feel this should be published as a possible further example of death caused by the rapid injection of neostigmine.

I have made a practice, since hearing of Professor Macintosh's case, of giving the neostigmine and atropine in very small divided doses. It might also be remarked that we have found that slowing of the pulse occurs much less commonly if the proportion of atropine to neostigmine is that of 1/100 gr. (0.65 mg.) to 2 mg.—I am, etc.,

Lincoln. J. CLUTTON-BROCK.

### Research in Renal Disease

SIR,—Dr. A. A. Osman (May 21, p. 910) has drawn attention to a number of matters which far transcend in general importance the particular one which prompted him to write to you—hence this present note. We ourselves stress, as he has done, the leading role played by renal disorders in the incidence of crippling disease and of death; we also think, as he obviously does, that there should be far fuller integration of knowledge about the kidney, more systematic planning and co-ordination of research to add to that knowledge, and expert transmission of the results in the ways best calculated to ensure that renal irregularity is recognized and, if possible, checked before irreversible changes have occurred.

These objectives demand co-operation between a wide variety of preclinical, clinical, and other workers, very much more generous endowment than has hitherto been available, and one or more research and teaching headquarters. From the experience of two of us at Oxford during 1945–7, and of the three of us in London from early in 1948 to date, we can testify whole-heartedly to the value of the many-sided approach to renal problems. The story of the Oxford co-operative effort is well enough known, and we need not give it again here. In the current renal researches our own main contributions are necessarily those of a physiologist, a comparative physiologist, and an orthopaedic surgeon, and we are very conscious of the widening of our scope which association with other workers—pathologists, obstetricians, renal-clearance experts, and so forth—is making possible.

Because of our experience on a small scale with relatively scanty research time and financial support, we can envisage the sort of success which could attend the efforts of a far wider association of researchers with fuller time, proper accommodation, adequate endowment, and centralized direction. In the same building or buildings, as a correct counterpart to all this, the knowledge secured by past and current research could be made available in clear-cut form to postgraduates and students, and they could be briefed in the best methods for the prevention and arrest of kidney malfunctioning.

Is it too much to hope that the necessary steps will before long be taken, and that some more radical kind of halt will thereby be called to the disablement and fatalities produced by renal disorders? There are many institutes of cardiology but few, if any, of nephrology, though the heart is more often than not the victim of the kidney's initial malpractice.—We are, etc.,

K. J. FRANKLIN.
St. Bartholomew's Hospital Medical College.
E. C. AMOROSO,
Royal Veterinary College.
J. TRUETA,
Wingfield-Morris Orthopaedic Hospital.

### Hereditary Cheiropompholyx

SIR,—The case seen by Dr. S. H. Curry (May 21, p. 913) appears to be the local variety of epidermolysis bullosa more or less completely localized to the hands or feet or both hands and feet, characterized by a recurrent bullous eruption in summer—the exciting cause being the hot weather more than local trauma.

The familial incidence was first pointed out by E. A. Cockayne,[1] who could find only one similar case previously recorded,[2] and that without known family incidence. This was in a boy, then aged 4 years, under my care, who, I hear, suffered very much from the complaint in summer when he was in the Royal Air Force during the late war. I have been told of a similar case in a boy aged 6 years, but with hereditary incidence. Many cases have been recorded in America—see especially Waisman's[3] report entitled "Recurrent Bullous Eruption of the Feet and Hands (Weber–Cockayne)." The striking pedigree given by J. B. S. Haldane[4] should also be seen.—I am, etc.,

London, W.1. F. PARKES WEBER.

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## POINTS FROM LETTERS

### Treatment of Spondylitis with Cortical Extract

Dr. J. THOMSON SHIRLAW (Wigan) writes: After reading the leading article (May 7, p. 812) I am constrained to mention a case of ankylosing spondylitis treated by me last year with an extract of suprarenal cortex. The patient's own statement of its effects is that, whereas his symptoms were aggravated by previous injections of gold and the application of *x* rays, they were improved after the adrenal cortex injections. I was led to adopt this treatment by the appearance in him of thick, solid limbs, shoulders, and buttocks, loss of sexual desire, and exhaustion after little effort. Owing to the high cost of the remedy I gave 40 minims (2.4 ml.) twice weekly; as he improved I reduced this to once weekly. Such doses were too small and too widely spaced. Now, encouraged by the results of the clinical trials mentioned in your leading article, I hope to resume the treatment and will make it more intensive. There is little doubt that in my case, at any rate, there is a break in the harmonious relations of the functions of the pituitary and adrenal glands.

# Obituary

Dr. JAMES ROBERTSON WILLS, of Peterborough, died suddenly from coronary thrombosis on April 16, at the age of 46, while on holiday at Jersey. Dr. Wills was born in Co. Mayo, and graduated in Dublin in 1923. He was a well-known Irish cricketer, and in addition to being captain of the Trinity eleven he also played for the Gentlemen of Ireland for many years. During the 1914–18 war he served in the Royal Navy with the rank of surgeon-probationer. He came to Peterborough from Northampton in 1930 to join Dr. Egerton Gray, and when Dr. Gray died in 1944 he took over the practice. He was chairman of the Peterborough Division of the B.M.A. in 1941–3.

Dr. Christopher Rolleston writes: In Dr. J. R. Wills one expected to find a good doctor and a charming individual. These expectations were not disappointed, and on a vacancy occurring at St. John's Hospital, Peterborough, he was appointed to that institution. Until then very few confinements had taken place in the hospital, but Dr. Wills soon had up to 300 or more patients a year there. On the opening of the new maternity home, "The Gables," the booking was even heavier. With the handing over to the hospital board this part of Dr. Wills's activities ceased, but he became deputy medical superintendent of the infectious diseases hospital and continued as medical officer to St. John's Hospital, where his work was much appreciated not only by the patients but also by the staff. As county medical officer during the whole of Dr. Wills's life in Peterborough I must testify to his ability, loyalty, and charm of manner.

ROBERT SCOTT WILSON died suddenly at Denbigh at the age of 44 on April 26. As consulting psychiatrist at the E.M.S. Hospital, Wrexham, and deputy medical superintendent at the North Wales Hospital for Nervous and Mental Disorders, he was well known throughout North Wales. After leaving Leith Academy he became dental mechanic to Dr. Radford, of Edinburgh, who encouraged him to take the L.D.S. Then, by alternately studying medicine and earning his living at dentistry, Wilson qualified in 1930. He was house-surgeon and casualty officer at the District Infirmary, Ashton-under-Lyne, before entering general practice and becoming police surgeon to the Old Trafford area of Manchester. Wilson was soon interested in the difficulties of neurotic patients, and he was appointed medical officer to the mental hospital at Warwick. There he did some work on continuous narcosis, and took part energetically in research into the physical methods of treatment, which were then in their infancy. He obtained the diploma in psychiatry of Edinburgh University in 1940. A year later he went to the North Wales Hospital for Nervous and Mental Disorders as deputy medical superintendent. His broad shoulders carried many burdens during the period of wartime shortage of staff when the work of his hospital increased and the newly opened out-patient departments throughout North Wales expanded rapidly. Wilson's interests were wide. He revelled in mechanical and engineering problems, and enjoyed political and economic discussions, in which his verbal facility and apt comment compelled attention. He was a keen freemason and always delighted in championing the Scottish ritual. He was an active member of the B.M.A. and of the Royal Medico-Psychological Association. Wilson's confident manner and willingness to listen and to help concealed, however, a private anxiety. He had had a coronary thrombosis in 1943. Two years ago there were warning signs of the cerebral aneurysm which eventually caused his death. Perhaps this knowledge contributed to the remarkable quality of gentleness and courtesy which he revealed, particularly when dealing with adolescents at his child-guidance clinics. Bob Wilson will long be remembered for his robust and invigorating personality. He leaves a widow and four children.—T. G. W.

Dr. JOSEPH JONES, of Howarth Cross, Leigh, died in a nursing-home on April 30 at the age of 80. Dr. Jones, who was born in Rochdale, was a student of Owens College, Manchester, and graduated M.B., Ch.B. in 1894. Soon afterwards he settled in general practice in Leigh, Lancs. He was always particularly interested in obstetrics, and he was awarded a gold medal for his M.D. thesis in 1906 on "Some Causes of Delay in Labour." Dr. Jones was an honorary physician to the Leigh Infirmary, and police surgeon. He was chairman of the reconstituted Leigh Division of the B.M.A. in 1938–9, and he served on the National Formulary Subcommittee from 1927 until 1938. He was also for many years a member of the Lancashire Panel Committee. Dr. Jones had many other interests, including photography and literature, and he was a frequent visitor to the Norfolk Broads. He was a fluent speaker, and his speeches at the annual dinner of the Division were eagerly awaited.

Dr. Isobel Gardner writes: If anyone ever deserved the title of "family doctor" it was Dr. Joseph Jones. He started in Leigh as an assistant to his uncle, to whom wooden stethoscopes and dental extractions were part of the way of life. Growing up with the people he served, Dr. Jones had an intimate knowledge of three generations in many families. When I went to him as an assistant in 1941 I was struck by three things: his ability to see and treat each patient as a person complete with family history and troubles, rather than as a case in a textbook; his wide range of interests and breadth of culture; and the time he managed to devote to keeping pace with everything useful in the literature. The people of Leigh will remember with gratitude and affection the lifetime's work done among them by "Old Joe."

Dr. DAVID RIDDELL, of Bowness, Windermere, died suddenly on May 4 at the age of 71. A native of Glasgow, he was educated at the High School there and at Glasgow University. His postgraduate experience included a period of work with Sir William Macewen, and later with the Metropolitan Board in London. Then, before settling down in general practice, he spent some time in the Berlin clinics. Riddell came to Kendal in 1908, and for more than thirty years he served wholeheartedly the town of his adoption and the county hospital where he was one of the surgeons. In 1923 he was appointed a justice of the peace for Kendal, and for some years he was the senior magistrate and chairman of the juvenile panel. Eleven years ago he retired and came to live in Bowness. As evidence of the esteem in which he was held he was made the high sheriff of the county in 1947. Riddell was a typical Scot, a man with a pawky humour and a twinkle. He was prompt, cheery, and kind, and he identified himself with every social and cultural movement in the county, and was everywhere *persona grata*. Music to him meant much, and he was an able performer on the organ and piano. Such was the man whose vital personality will be sorely missed.—J. H.

Dr. RICHARD SHAFTO CHAMBERS EDLESTON died on May 8 at the age of 78. He was a native of Cheshire, and was born at Nantwich. After leaving school he acted as an untrained assistant to a general practitioner in Derbyshire, being one of the last men of his generation to serve in such a capacity. He received his medical education at St. Bartholomew's Hospital, qualifying in 1897. Subsequently he was appointed house-surgeon to the Miller Hospital, Greenwich, and later he was senior house-surgeon at the Royal Salop Infirmary, Shrewsbury. Shortly before 1900 he went to Baslow as an assistant to the late Dr. Wrench. After two years he left to take charge of a large country practice in Teesdale. Then in 1904 Dr. Wrench invited him to return to Baslow as his partner, and in the same year, on Aug. 11, his engagement to Miss Nancy Wrench was announced. After the death of Dr. Wrench in 1912 Dr. Edleston took sole charge of the practice. During the 1914–18 war he acted as medical officer to all troops stationed in Chatsworth Park. Following a serious illness in 1935 Dr. Sinclair Evans joined him in practice, and he retired and went to live in Cheshire in the autumn of 1938. Dr. Edleston played a prominent part in local affairs, being a churchwarden, a trustee of the Stockdale Institute, and a member of the old Baslow urban district council. He was also honorary medical officer of the Bakewell Cottage Hospital. He was a worthy representative of the type of country doctor which has now almost disappeared. He enjoyed a high reputation, and his patients regarded him as a friend. In his early days horseback was his usual means of travelling on his rounds, but he was one of the earliest motorists in the district. He is survived by his widow, two daughters and one son.—S. E.

# The Services

Major-General R. E. Barnsley, C.B., M.C., and Lord Webb-Johnson, K.C.V.O., C.B.E., D.S.O., T.D., P.R.C.S., have been appointed Honorary Colonels of the R.A.M.C., T.A.

Major (Acting Colonel) H. F. Apthorpe-Webb and Major F. M. Owen, R.A.M.C., T.A., have been awarded the Efficiency Decoration of the Territorial Army.

# Medico-Legal

## GROSS NEGLIGENCE ALLEGED

### Removal from Executive Council's List Recommended

The West Sussex Executive Council, at its meeting on May 19, approved a report by the Medical Services Committee on three complaints brought against doctors on the N.H.S. list. In two cases, after careful consideration, the complaint was dismissed. The Council accepted on the third case the committee's recommendation that the retention of the doctor's name on the medical list would be prejudicial to the efficiency of the Service.

This appears to be the first occasion since July 5, 1948, on which Section 42 of the N.H.S. Act, 1946, has been invoked in the case of a doctor. This is the Section which provides for the setting up of a tribunal, and representations will be made to the tribunal by the Executive Council. The chairman of the tribunal will be a practising barrister or solicitor appointed by the Lord Chancellor, and of the two other members, appointed by the Minister of Health, one must be a medical practitioner.

#### Complaint

The complaint was made by the father of a child, and concerned the provision of medical attendance and treatment by a medical practitioner whose name was included in the medical list for the provision of general and maternity medical services. The complainant stated that on the evening of April 8 he and his wife noticed that their baby was looking rather sick. On the arrival of the nurse she instructed him to ring up the doctor and ask him to call. He did so at about 7.45 to 8 p.m. and received no reply. He rang again at about 9 p.m. By 10 p.m. the doctor had not arrived and so he rang his partner and someone took the message.

At about 11 p.m. he telephoned again and left a message. Later, at about 11.30 p.m., he again rang and was told that the doctor was on the way. The doctor arrived at about 12.15 a.m. He was "the worse for drink" and literally fell up the stairs. The next the father heard was four or five bangs, ten minutes later, as the doctor left the house. He went upstairs and at the nurse's request again phoned the partner.

The nurse said that the mother had attended the doctor for antenatal care. At about noon on April 7 the patient was delivered by forceps of a male child which weighed 5¾ to 6 lb. The baby cried, did not appear to be very strong, and was slightly cyanosed.

At 7.45 p.m. on April 8 she made her routine visit, and as it was obvious that the baby was very ill, with increased cyanosis, she was somewhat anxious. The husband telephoned at her request and said there was no reply. In order to eliminate any possibility of error she herself phoned at about 8.20 p.m., but got no reply.

She held the baby before the fire, rubbed its limbs, and raised the foot of the cot. As there were no signs of improvement she sent the husband to phone the doctor's partner and after the doctor himself.

The doctor arrived at about 12.20 a.m. He was in a very definite intoxicated condition. He had a staggering gait and slurred speech. She apologized for having called him out so late, to which he replied: "Yes, I should think so." She undressed the baby, and the doctor attempted to percuss the chest, but his condition was so unfortunate that he frequently missed, striking the child's chest instead of his own finger.

The doctor said that the baby was perfectly fit. He rubbed his hand across the nurse's face in a nauseating manner, grabbed her by the nose, and said: "That's all right, nursie." He then left. She immediately sent the husband for the doctor's partner.

The baby died at 12.50 and at 12.55 the partner arrived. He declined to issue a death certificate. After making the mother comfortable she left at 1.30 a.m.

#### Reply

The doctor said that he had nothing to add to his letter to the Council, dated May 4.

"I confined Mrs. —— on April 7—low forceps—at 11 a.m. The baby was undernourished and debilitated. I again saw the baby on the morning of April 8. I was aware that Mrs. ——'s first baby had died of atelectasis and I therefore paid considerable attention to the condition of the baby, but after careful examination I could not substantiate that there was anything clinically wrong with it, though it was undoubtedly a sickly child. There was no specific treatment necessary in my opinion beyond careful nursing. . . .

"At the evening of April 8 I was present at a children's party. . . . At approximately 11.30 p.m. I received a message from my housekeeper. I accordingly at once left the party, drove back to my own house, collected my equipment, and immediately visited Mrs. ——. I examined the child again, and in spite of the anxiety of the parents and nurse I could still find nothing clinically wrong, nor was there anything that could have been done for the child. . . . I did not think the child was in any immediate danger and accordingly, having completed my visit, I went home and went to bed. It is now clear, of course, that this baby was also a victim of atelectasis.

"I was therefore right in my diagnosis that there was nothing clinically wrong with the child save general weakness and debility, and I was also right in concluding that there was no treatment that could be given. . . . I recognize now that the child must have been nearer to dying than I realized. . . .

"Of course, much the most serious allegation in Mr. ——'s letter is that I was drunk when I visited his house, and this I most emphatically deny. As stated, I was at a children's party, and your Council will, I am sure, recognize the extreme improbability of anyone allowing himself to become intoxicated on such an occasion.

"It is a fact that intoxicants in moderation were being served at the party, and it is therefore more than probable that during my examination of the baby Mr. —— smelt alcohol in my breath, and I can only hazard a suggestion that this, coupled with the fact that I was of course in evening dress, and the unfortunate sequence of events and the shock of the child's death have led Mr. and Mrs. —— to this erroneous conclusion."

#### Findings

The committee found that the wife of the complainant was on the doctor's list. During the night of April 8 efforts were made, without success, to obtain his services. No provision had been made by the doctor for the reception of messages during the period he was absent from home. He received the complainant's message at 11.30 p.m. and attended at approximately 12.20 a.m., when, after examining the baby, he stated that there was nothing the matter with it and left. The child died half an hour later.

The committee was favourably impressed by the evidence of the nurse, and, accepting her evidence as to the condition of the baby, it seemed incredible that the doctor could have failed to realize its serious condition. That he did not do so did, apart from his general behaviour, confirm the charge that he was intoxicated. Her evidence in support of her contention that the doctor was intoxicated was convincing. She demonstrated his frequent missing of the percussion finger and striking the baby's chest. This, the doctor claimed, was "intermediate percussion" and was intentional. No effort was made by the doctor or his representative to cross-examine this witness.

Evidence on behalf of the doctor was given by several witnesses who were at the party and by others, all of whom testified that he was quite sober throughout the evening and up to the time he left for his home, which involved driving a car a distance of six miles.

"Intoxicated" was a relative term assessed differently by different people. When associated with a doctor attending a patient it might be regarded in a degree higher than that which would be associated with a party. The evidence regarding the telephone calls was conflicting. Whatever the true explanation might be, it was not disputed that the doctor made no arrangements for dealing with any urgent calls during that time.

Apart from the doctor's negligence in this respect the committee considered:

(*a*) That he was grossly negligent in failing to realize the serious condition of the baby and to provide treatment therefor.

(*b*) That his negligence in this respect was contributed to by his intoxicated condition.

The committee therefore recommended and the Executive Council accepted: "That, as in the opinion of the Council the retention of respondent's name on the medical list would be prejudicial to the efficiency of the Service, representation to that effect be made to the tribunal constituted under Section 42 of the Act."

# Medical Notes in Parliament

## NATIONAL HEALTH SERVICE (AMENDMENT) BILL

The National Health Service (Amendment) Bill was given a second reading in the House of Commons on May 24.

The Lord Advocate, Mr. JOHN WHEATLEY, said the purposes of the Bill were broadly three. First, to clarify and amend the application to partnerships of those sections of the National Health Service Acts which prohibited the sale of practices by doctors in the Service and which compensated them for the resulting loss of the selling value of the goodwill. Secondly, to carry out certain promises of amendment made to the medical profession in the discussions both before and since the beginning of the Service. Thirdly, to make certain minor administrative changes which experience had shown were desirable.

Mr. Wheatley then described in detail the effect on medical partnerships of Part I of the Bill, which was printed in full in the *Supplement* of May 21 (p. 274). There were only 50 "mixed practices," of which only one was in Scotland, and the new fund required for compensation in these cases was not likely to be large. He drew attention to the opportunity given to all members of partnerships who had not yet joined the Service to do so before the second appointed day, which would be two months after the date on which the Amending Bill became an Act. The committee under the chairmanship of Mr. Justice Slade had recommended that assistants should be treated in the same way as partners, and effect had been given to this recommendation.

It was realized that, despite all the attempts which had been made to secure justice as between one party and another, there might be the odd case in which the operation of the principles laid down by the Slade Committee and incorporated in the Bill might lead to hardship. Provision had therefore been made for arbitration in such cases, and, failing agreement between the parties on a single arbitrator, the issue would be referred to a committee consisting of a legal chairman appointed by the Lord Chancellor or the Lord President of the Court of Session, a medical practitioner appointed by the President of the British Medical Association, and an accountant. Finally, in Part I of the Bill it was made clear that Section 35 of the principal Act, or Section 36 of the corresponding Act in Scotland, did not prevent a doctor who had never been in the Service from selling the goodwill of his practice even although part of that goodwill was acquired from a partner inside the Service.

It was possible under the Health Service Acts, and in point of fact under the National Health Insurance Acts ever since 1912, to introduce by regulation a whole-time salaried service. The pledge given by the Minister of Health that it would be made clear in legislation that a full-time service could not be instituted by regulation alone was fulfilled in relation to general practitioners by Clause 10 and in relation to specialists by Clause 11 of the Bill.

Among other minor matters which arose under Part II of the Bill professional members of the tribunal were to be drawn from a standing panel of members of the profession selected to cover the different types of practice involved, whether rural, industrial, or some other type. All executive councils were in future to elect their own chairman from among their own members. Provision was made for the removal from the lists of executive councils of doctors or others who had removed from the district and were not, in fact, available for that or any other reason to provide services in that area. The period for claiming fees under the Midwives' Act was extended from two months to three months.

Under Clause 12 they had put the coping stone on the structure of Whitley Councils built up for the negotiation of the terms and conditions of service of all of the many types of officers engaged in the National Health Service by enabling arbitration machinery to be set up where disagreement arose between the official and the staff sides. The intention was to set up a tribunal for the Health Service on the lines of the Civil Service Arbitration Tribunal, the details of its constitution and procedure to be settled by the terms of an arbitration agreement made between the two sides. He was confident that the Bill would receive support from all sides of the House. It was but a further step in the development of a scheme which, in its short span of ten months, had already invoked the admiration and respect not only of the people of this country but of the people of the whole world.

### Buying and Selling Goodwill

Sir HUGH LUCAS-TOOTH said he did not feel strongly about the retention or otherwise of the power of a doctor to sell the goodwill of his practice. This was not really a question of principle in his view—a view generally shared by the Opposition. The members of some professions had been able at all times to sell and to buy the goodwill of their practices. The members of other professions had not been so able. That applied, for example, to the legal profession, and he thought that it was a pity that there had not been the same state of affairs in the medical profession. He recapitulated the criticisms of Sections 35 and 36 of the principal Act put forward by Mr. Willink at the committee stage and on report. It was a pity the Minister of Health had not consulted with the law officers on these points at the time they were discussed.

After the principal Act was passed lengthy discussions took place between the Minister and the doctors. The doctors had three main objections to coming into the new Service: the fear of a full-time salaried service; their objection to the abolition of buying and selling of practices; and their fear of direction. The doctors had quite properly and democratically held a plebiscite at which general practitioners voted by an overwhelming majority of the order of 12 to 1 against coming into the scheme. The doctors meant business, and the Minister had had to give way. On every principal objection which the doctors raised the Minister had had to give way.

Subject to detailed consideration in committee the Opposition thought this was a good Bill and they desired to give it their support. Clause 10 said: "The remuneration to be paid . . . shall not . . . consist wholly or mainly of a fixed salary." He thought that effect would be given to those words if the fixed or basic salary did not exceed half the total emoluments.

Concluding, he said that the fundamental trouble with the Health Service Acts was that the choice of priorities was wrong. The Acts were founded on two fallacies: that unlimited money would be available, and that only expenditure was needed to provide a good health service. Free spectacles were admirable things, but were very rarely matters of life. The more free spectacles were available to the people the longer the queues would become at the hospitals. The hospitals were matters of life in this connexion.

Mr. BEVAN, intervening, said that it was perfectly competent for the Opposition to put down an amendment to the Bill removing from the range of free issues any part of the Health Service. If they wished to do that they should take the opportunity. If the Opposition wished to restrict the range of free health treatment it was quite open to them to put down an amendment.

Mr. FRANK BYERS said that the question of the direction of doctors had been used as a sort of political propaganda stalking-horse. The National Health Service was a long-term project and he deplored irresponsible political sniping at the Health Service and at the Government in their administration of it. He thought that there were many things that would have to be amended. The position of the rural doctor would have to be looked at again. The Bill ought to have been called the National Health Service (Amendment No. 1) Bill, because there would have to be amending Bills Nos. 2, 3, and 4, and then a consolidating Bill.

### Specialist Services

Mr. MESSER thought that the Minister in this Bill had given the doctors more than most people would consider necessary. Discussing specialist services, he said that part-time specialist services were tied up with the paid beds provision. Children who required tonsillectomy might have to wait for nine months to two years for the operation but could be admitted to hospital at once if the operation were done privately at a cost of from £30 to £50. That was one of the dangers of part-time specialists.

The part-timer could undertake work which entitled him to 9½/11ths of the salary he would earn as a full-time specialist. He was entitled to up to 800 guineas per annum for domiciliary visits. He could make special visits on behalf of the regional board at 5 guineas per visit. He could work as a locumtenent at 5 guineas per half-day, and he was entitled to work in his own private practice. There were also such things as income-tax allowances for expenses that were denied the full-time specialist.

He mentioned these things because he thought too much importance was being placed on the proviso that in no circumstances would there be introduced a regulation which would make all specialists full-time. Mr. Messer went on to suggest that consideration might be given to placing on the regional hospital boards the responsibility for the provision of facilities for postgraduate study.

Mr. PETER THORNEYCROFT criticized not so much what was in the Bill as what was left out. On the question of analgesia in childbirth he had a proposition to put to the Minister of Health. Two new Clauses had been placed on the Order Paper and if the Minister would accept them on the committee stage he would withdraw his Analgesia in Childbirth Bill. The new Clauses gave him 75% of what he wanted.

Mr. DAVID RENTON, speaking as the son of a general practitioner, took objection to the vagueness of Clause 10. It would be useful if the Minister were to give the House some idea of what he had in mind when he said that in special circumstances the proviso with regard to there being no fixed salary or not mainly a fixed salary should not prevail. If these "special circumstances" were to be interpreted too broadly the whole effect of this amendment would go by the board.

### The Minister and the Medical Profession

Dr. BROUGHTON welcomed the Bill, but he also thought that the Minister had gone too far in trying to meet the demands of the medical profession. He quoted extracts from a leading article in the *British Medical Journal* of May 21 (p. 904): "The B.M.A. conducted a campaign against the introduction of a whole-time salaried medical service. . . ." "It did not accept the assurance of the Minister that this was not the Government's intention. . . ." "Mr. Bevan once more bowed before the storm. . . ."

The Act of 1946 was arranged so that the Minister could conform to the wishes of the medical profession and the best interests of the country. The day might come when the profession wanted a full-time medical service, and it would have difficulty in obtaining one if Clause 10 became law. He suggested that the Minister was pampering a section of the profession most politically prejudiced and panic-stricken. He quoted again from the same *B.M.J.* leading article.

The only other criticism he made was in regard to the proposal that the executive councils should allot to the medical, dental, and other local committees such sums for deferring the administrative expenses, including travelling and subsistence, as were necessary. Why should the administrative expenses of these committees and the travelling and subsistence allowances of the members have to be met by compulsory deductions from the salaries of doctors, dentists, and pharmacists? This should be a public expense. Doctors were not wealthy men, and they must not be judged by their gross incomes, because many of them had heavy practice expenses. They asked only that their remuneration should be sufficient to allow them to give freely their self-sacrificing service in accordance with the traditions of an honourable profession.

Mr. BAIRD said he was astonished to hear Mr. Renton deploring the fact that the National Health Service Act had been treated as a political issue. The Health Service scheme had been political right from the very beginning, and up and down the country before the Bill was introduced the Tory Party and the B.M.A. were misrepresenting what was in the minds of Labour members. He referred especially to the dental services under the N.H.S. It was written into the original Act of 1946 that the Minister should provide a priority service for expectant mothers and young children, but the fact was that the establishment of dentists employed by local authorities for this purpose for treating the priority classes was under 50%. The Minister should take over the treatment of these priority classes and run it on a regional basis. There were perhaps 10% of the dentists who were guilty of acting in a most unprofessional manner.

### Conciliation Machinery

Mr. LINSTEAD said it was hopeless to think of attracting dentists into a salaried service while there was the enormous disparity between official salaries and what could be earned in private practice. The Minister's main task now was to carry the professions with him. He had gone some way to meet the doubts of the medical practitioners, and it was of value to have a statutory guarantee that a full-time salaried service should not be introduced save by Act of Parliament. He thought that some gesture to the dentists was very badly needed. The dentists felt that they were faced with a unilateral alteration of terms of service by regulation.

He felt that Clause 12 should be carefully considered because it brought into the N.H.S. a large section of the conciliation machinery applied to industrial disputes. This raised two important points of principle. First, the Minister of Labour was brought in under the Conciliation Act, and as a matter of constitutional propriety he wondered whether it was right or proper for one Minister to purport to arbitrate in a dispute where one of the parties was a Minister of the Crown. This wanted looking into on the committee stage to ensure that they were not putting either the Minister of Health or the Minister of Labour into a false position.

The second and more important point was that if the industrial court was chosen under the Industrial Courts Act, 1919, as a means for resolving a dispute between the Minister and any section of employees in the National Health Service, then there was no provision for the enforcement of any award which might be made. He hoped the Minister would be able to give some assurance that in these arbitration proceedings, whatever form they took, he would as party to them regard himself as bound in advance by the decision of the arbitrator.

Mrs. MANN referred again to the question of analgesia under the Midwifery Service, and quoted freely from the report of a subcommittee of the Medical Women's Federation which appeared in the opening pages of the *British Medical Journal* of Feb. 26 (p. 333).

Mr. HOWARD welcomed the amendment to the Bill allowing hospital boards and management committees to subscribe to certain approved associations. He hoped that the right accorded to certain committees to elect their own chairmen would be extended. He asked the Minister to explain the significance of another minor amendment, the removal of the words "loss of remunerative time" and their substitution by "any loss of earnings which would otherwise be made." Was this amendment significant, sinister, or merely silly?

He also made the point that in some of the Acts recently imposed by the Minister the question of war damage had been treated unfairly. One hospital had put in its original budget provision for capital expenditure which included £100,000 of war damage. That item had now to be cut to £90,000. Therefore the board of that hospital must leave a vast amount of war damage unrepaired for yet another year. This difficulty applied to every hospital in every blitzed area. In conclusion, he urged the Minister to carry out his declared intention of delegating responsibility as widely as he possibly could. Without such delegation the Service could not possibly work satisfactorily.

### Safer Motherhood

Dr. HADEN GUEST said it had been contemplated from the beginning that it would be necessary to introduce not only one but a series of amending Bills. There were two simple and important things that had been done since the N.H.S. came into operation. Women and children who had previously had to pay for medical treatment were now able to get treatment without paying fees at all. The other great gain was in the reorganization of the hospital system.

He thought that some Members were inclined to attach too much importance to the question of analgesia in childbirth. It was desirable that women should be relieved of the pain of childbirth, but that was by no means the only thing of value about a properly organized maternity service. Analgesia was not necessarily wanted for all women, but safer motherhood was.

They wanted to reduce to *nil* the number of deaths in childbed and the number of cases of injury to mother or child at the time of birth. This could be done. He referred to a series of 5,000 consecutive deliveries without a maternal death reported recently by Mr. Norman Emblin in the *British Medical Journal* of Feb. 12 (p. 260). These results had been achieved not by anaesthetics or analgesics only, but by the setting up of an organization which meant that every difficult case had a doctor and a medical and surgical specialist team in attendance.

He pointed out, however, that a great increase in the use of analgesia had been brought about by administrative methods under the National Health Service. In 1938 the proportion of women who received analgesia in childbirth was only 0.4%. By 1943 it was 1.2%, and by 1945 3%. The 1946 figure was 6.9%. By 1947 it was 13.3%, and in the last six months of 1948 the figure had gone up to 35%. He thought that this was one of the advantages that had flowed from the N.H.S. It was not true to suggest that the Ministry of Health was failing in its duty in this respect.

Colonel STODDART-SCOTT thought the Bill improved the original Act, but he hoped that hospital management committees and governing bodies of teaching hospitals would also be able to choose their own chairman. He referred to the fact that before July 5, 1948, it was obligatory upon local authorities to provide accommodation for the aged sick. The 1946 Act took this responsibility away from the local authorities and put it into the hands of the regional hospital boards. He did not believe that the boards had carried out these duties in the same way as they were carried out before.

When people were old and a little muddled, it was found that the only hospital accommodation available to them was in a mental hospital. At one Birmingham hospital in 1947–8 only 20 people over the age of 65 were admitted. In the period of 1948–9 the figure was 93, and of these old men and women 30 had died from pneumonia, heart trouble, and similar conditions. It was difficult to get old people who were chronically ill into other accommodation, such as previously existed.

In the N.H.S. the first priority must be an adequate hospital service. It was remarkable that a drastic cut imposed on the Health Service by the Minister should have been on that element of the Service which had borne the brunt of increasing attendance. At some general hospitals in the North out-patients' attendances had increased by 100%. He thought it more important that hospital accommodation should be available than that

people should be able to obtain two pairs of identical spectacles, or that wigs should be given to foreigners.

### Drugs for Private Patients

Mr. HENRY STRAUSS welcomed the Bill and so did Sir WAVELL WAKEFIELD, who said that there was one matter which he had raised previously at question time. When the Service was introduced the Minister stated that people would be free to have the Service in whole or in part. Members of the public who wished to pay for the services of a doctor and therefore did not use that part of the Service felt a great grievance because they were debarred from having the free appliances or drugs available to patients who took advantage of the whole Service.

It was wrong that because a person elected to be a private patient he should be debarred from the benefits that the Minister had stated very definitely would be available to him. Many doctors while in the State service had private patients. In treating State patients doctors could not prescribe appliances or drugs which were not acceptable to the State. Surely the same set of rules and the same administrative requirements could be applied to the person who was a private fee-paying patient.

Foreigners who made no contribution received the service free of charge. Private patients could not receive drugs and appliances which they had paid for by way of taxes. The Minister ought to remove this grievance and make it possible for people to receive drugs though paying fees for private treatment from doctors. He also suggested that whatever expense there would have been to the State ought to be allowed for in any charges made for private paying-beds.

Lieut.-Colonel WALTER ELLIOT said that there were now about 454,000 hospital beds in the country. The Emergency Medical Service had run this number up to well over half a million, and so long as there were 50,000 hospital beds in existence but not staffed all the steps which could be taken towards solving the problem of producing an adequate Health Service had not been taken.

There had been considerable uneasiness and distress among the medical profession. There was still a deep Freudian bruise in the mind of the medical profession about the negotiations, which were conducted more as a military operation than as a kind of negotiation. However, the Bill before them carried out the promise of the Minister, and he did not think there was any breach of faith in the Bill.

Dr. Broughton, he said, had early acquired the political trick of using that part of a quotation which suited him and leaving out the rest. He had quoted from the *British Medical Journal* leader to the effect that they had refused to accept the assurances of the Minister. He had left out the explanation in the second half of the sentence, which was that although the Minister might not remain he could not bind his successor. He might perhaps have quoted also another leader in the *British Medical Journal* (May 14, p. 856) dealing with the actual reduction in beds which would follow the recent circular from the Minister.

He quoted at length from this leading article on the effect of the recent cuts on St. Bartholomew's Hospital, Oxford, Bristol, Birmingham, and Manchester. The cost of the health services was still rising and had not yet reached its peak. The Opposition did not propose any cuts in the health services; the money to complete them would have to be found. The Bill before them certainly implemented the promises made by the Minister during the passage of the Bill, promises which the Opposition believed to be necessary. If they had not been implemented then it would have given rise to a grave breach of faith.

### The Minister's Reply

Mr. BEVAN said that most of the doubt which arose in 1946 and subsequently and most of the anxieties which the doctors had been suffering were a direct consequence of the unbridled propaganda of some leaders of the medical profession at that time. They created suspicion and doubt where none in fact existed. The Amending Bill was necessary not because of the obscurity of the original Act but because of the complexity of the subject. At the same time, although there were between 17,000 and 18,000 G.P.s in the country, this Bill affected only 50 partnerships.

The proposed new Clauses about analgesia he would deal with at the committee stage. He could certainly not accept the peculiar bargain of agreeing to admit those Clauses in return for the withdrawal of a Private Member's Bill that might never reach the Statute Book. The country was being given the impression that if only these new Clauses were in operation more women would be relieved of pain in childbirth. This was not true. They were up against the physical limitations of the lack of sufficient trained midwives and general facilities.

Every sick person must feel that he or she was receiving as much attention as any other person. It was wrong to suggest that a certain group of patients were to have priority over any other group. Before many years had passed every woman in this country would be able to have analgesia or anaesthesia if she wanted it.

The Minister then went on to discuss the question of expenditure. One member had asked, "Why on earth should we cut the hospital service and issue free spectacles?" By what conceivable alchemy could he transmute a citizen without a pair of spectacles into a trained nurse looking after a patient? He could not get trained nurses by letting half the country go blind. If the Opposition wished to economize at the expense of the provision of one of the free services let them have the courage to put down an amendment.

The administrative expenses of the National Health Service Act worked out at 2.3% of the total cost. The administrative expenses of private insurance companies were anything from 9¼ to 40%. This 2.3% total included the Health Division of the Ministry of Health, the price-fixing machinery for the pharmaceutical services, the Dental Estimates Board, all the executive councils, all the regional hospital boards, and all the management committees and secretarial expenses.

Administrative expenditure should be scrutinized narrowly, but there were no great savings to be obtained on the administrative side. The financial cuts were an attempt by the central administration progressively to exercise financial discipline over the whole Service while at the same time leaving the utmost amount of independent action at the periphery.

To the extent that abuses existed in the Health Service, to the extent that there were faults, they arose directly from those parts of the Health Service that had to be articulated through private enterprise—opticians, dentists, chemists, but not so much the chemists. He believed that before long everybody would take pride in the Health Service. It was already an inspiration to other nations.

The Bill was read a second time and committed to a Standing Committee, and the Money Resolution was agreed to in Committee.

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### Overcrowding in Mental Hospitals

On May 19 Mr. SORENSEN asked to what extent mental hospitals in London and the Home Counties were overcrowded; approximately what proportion of beds and wards was not being used through lack of staff; and whether recruitment for the mental hospital services was progressing or not.

Mr. BEVAN answered that accommodation in use was overcrowded by 4,048 beds (approximately 11% of the total). The proportion of bedspace available but not used because of lack of staff was 4.1%. Separate figures for wards not in use for this reason were not available. Recruitment of nurses was progressing. In 1948 there were 15% more nurses employed in these hospitals than in 1945.

### Artificial Limbs

Answering Lord WILLOUGHBY DE ERESBY, Mr. MARQUAND stated on May 24 that about 50 patients had worn artificial legs fitted with suction sockets for periods ranging up to about two years. As a result of observations made during these trials a number of modifications had been made, especially in the valve. A supply of the improved valves had just been received. He intended to ask a number of limb-makers throughout the country to fit suction sockets to their particular make of legs for trial by not less than another 100 patients.

Mr. Marquand further said that six mechanical hands of one type had undergone trials by selected amputees since April of last year. Reports were available for consideration by the Standing Advisory Committee on Artificial Limbs at their next meeting. Another type of mechanical hand had been produced and was being tested. If the Standing Advisory Committee was satisfied with the performance of either or both of these types of mechanical hand they would be made available to all disabled war pensioners and National Health Service patients for whom they were suitable.

*Administrative Staff.*—Mr. MCFARLANE inquired on May 17 what was the number of persons engaged on hospital administration in Scotland on July 1, 1948; and the number at present engaged. Mr. WOODBURN replied that information on the number at July 1, 1948, would have to be obtained specially and he did not feel justified in asking hospital authorities for it. The present number of officers engaged in administration (including clerical and typing staff) was about 2,200, which comprised the staffs of the five regional boards, the 84 boards of management, and the 425 hospitals in the Service.

*Dental Services.*—There were 9,347 dentists on the dental lists in England and Wales on May 1. The Ministry of Health Estimates, Class V(2), provide £28,204,000 for the cost of the general dental services in England and Wales.

No. 19

## INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended May 14.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland. *Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for:* (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland. A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

| Disease | 1949 | | | | | 1948 (Corresponding Week) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | (a) | (b) | (c) | (d) | (e) | (a) | (b) | (c) | (d) | (e) |
| Cerebrospinal fever | 44 | 1 | 17 | 3 | — | 36 | 2 | 21 | 2 | — |
| Deaths | | 1 | — | | | | 1 | — | | |
| Diphtheria | 90 | 16 | 24 | 1 | 5 | 153 | 14 | 57 | 10 | 3 |
| Deaths | 1 | 1 | — | — | — | 1 | — | — | — | 1 |
| Dysentery | 77 | 7 | 35 | 1 | — | 111 | 24 | 59 | — | — |
| Deaths | | | | — | — | | | | — | — |
| Encephalitis lethargica, acute | 3 | 1 | — | — | — | 2 | — | 1 | — | — |
| Deaths | | — | | | | | — | | | |
| Erysipelas | | | 19 | 9 | 3 | | | 30 | 8 | 1 |
| Deaths | | — | | | | | — | | | |
| Infective enteritis or diarrhoea under 2 years | | | | 47 | | | | | 18 | |
| Deaths | 35 | 7 | 8 | 1 | — | 30 | 3 | 9 | 6 | 1 |
| Measles* | 8,363 | 1108 | 444 | 213 | 202 | 11,879 | 1040 | 202 | 177 | 68 |
| Deaths† | | | — | 1 | — | | | 2 | 1 | — |
| Ophthalmia neonatorum | 46 | 2 | 10 | 1 | 1 | 46 | 7 | 9 | — | — |
| Deaths | | | | | | | | | | |
| Paratyphoid fever | 10 | — | — | — | — | 7 | — | — | — | — |
| Deaths | 1 | — | — | — | — | — | — | — | — | — |
| Pneumonia, influenzal | 406 | 20 | 2 | 8 | 11 | 611 | 30 | 2 | 5 | 5 |
| Deaths (from influenza)‡ | 15 | 1 | 2 | 3 | — | 7 | 1 | 1 | — | — |
| Pneumonia, primary | 171 | 19 | 165 | 46 | | 169 | 28 | 219 | 29 | 10 |
| Deaths | | | | 7 | 8 | | | | 14 | |
| Polio-encephalitis, acute | 1 | — | | | | 2 | 1 | | | |
| Deaths | | | | | | | | | | |
| Poliomyelitis, acute | 11 | 1 | 4 | — | — | 19 | — | 2 | 1 | — |
| Deaths§ | — | — | | | | — | — | | | |
| Puerperal fever | | — | 9 | | | | — | 5 | | — |
| Deaths | | | | | | | | | | |
| Puerperal pyrexia‖ | 78 | 6 | 5 | — | — | 101 | 5 | 2 | — | — |
| Deaths | | — | | | | | 1 | | | |
| Relapsing fever | — | — | | | — | — | — | | | — |
| Deaths | | | | | | | | | | |
| Scarlet fever | 993 | 70 | 177 | 55 | 35 | 1,675 | 134 | 283 | 47 | 45 |
| Deaths† | | | — | — | — | | | — | — | — |
| Smallpox | 1 | — | — | — | — | — | — | — | — | — |
| Deaths | | | | — | | | | | — | — |
| Typhoid fever | 7 | — | — | 1 | 1 | 6 | — | — | 3 | — |
| Deaths | — | — | — | — | — | — | — | — | — | — |
| Typhus fever | — | — | — | — | — | — | — | — | — | — |
| Deaths | | | | — | — | | | | — | — |
| Whooping-cough* | 2,906 | 183 | 208 | 129 | 82 | 3,117 | 217 | 45 | 124 | 15 |
| Deaths | 11 | 1 | — | 5 | — | 9 | 3 | — | 2 | 1 |
| Deaths (0–1 year) | 297 | 42 | 52 | 26 | 8 | 276 | 41 | 62 | 25 | 10 |
| Infant mortality rate (per 1,000 live births) | — | | | | | | | | | |
| Deaths (excluding stillbirths) | 4,655 | 681 | 628 | 202 | 116 | 4,431 | 688 | 581 | 178 | 131 |
| Annual death rate (per 1,000 persons living) | | | 12·6 | 12·5 | | | | 11·7 | 11·1 | |
| Live births | 8,177 | 1319 | 1056 | 487 | 235 | 8,504 | 1344 | 1107 | 471 | 247 |
| Annual rate per 1,000 persons living | | | 21·2 | 30·2 | | | | 22·3 | 29·5 | |
| Stillbirths | 210 | 25 | 34 | | | 217 | 42 | 28 | | |
| Rate per 1,000 total births (including stillborn) | | | 31 | | | | | 25 | | |

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Deaths from measles and scarlet fever for England and Wales, London (administrative county), will no longer be published.

‡ Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

§ The number of deaths from poliomyelitis and polio-encephalitis for England and Wales, London (administrative county), are combined.

‖ Includes puerperal fever for England and Wales, Eire, and Northern Ireland.

## EPIDEMIOLOGICAL NOTES

### Analysis of Deaths in 1947

The Medical Tables of the Registrar-General's Statistical Review for 1947 record that 515,591 civilians died in England and Wales during that year, an increase of 26,537 over 1946. This gave a crude death rate of 12.3 per 1,000 civilian population, compared with 12.0 in 1946 and an average rate of 12.1 for the 10 years 1929–38. Of these deaths 144,570 were due to heart diseases and 77,649 to cancer. These two groups thus accounted for 28.0% and 15.1% of the total respectively; in 1938 these proportions were 24.3% and 13.9%.

Deaths due to diseases of the coronary arteries and angina pectoris showed an abnormal increase, numbering 33,168 in 1947, compared with 28,580 in 1946 and 15,409 in 1938. To get a true comparison between those two years it is necessary to discount the changes in the sex and age structure of the population. When this is done, taking the 1938 incidence as 1.000, the corresponding figures in 1947 are 1.851 for men and 1.765 for women, indicating a total increase of about 80% in mortality attributed to this cause over the nine years.

Deaths from cancer show that male mortality is still increasing, and that the halt in the decline of female mortality seen in 1946 has been maintained. While for cancer of some sites, such as the mouth and pharynx, mortality is falling for both sexes, the mortality from cancer of other sites shows great increases. Among the 77,649 deaths in this group cancer of the lung contributed 9,535 (7,805 men and 1,730 women), compared with 4,658 (3,609 men and 1,049 women) in 1938. This accounts for three-fifths of the increase in male deaths from cancer.

Deaths from appendicitis numbered 1,491, less than half the total recorded in 1938, when there were 3,027.

### Food Poisoning

The Ministry of Health memorandum on food poisoning (188/Med.) was issued in 1935. Since then there have been two important developments in connexion with the control of disease conveyed by food—namely, the notification of food poisoning under Section 17 of the Food and Drugs Act, 1938, and, more recently, the establishment of the Public Health Laboratory Service. The memorandum has therefore been revised and issued to all medical officers of health.

Section 17 (1) of the Food and Drugs Act, 1938, provides that if a medical practitioner suspects that a patient is suffering from food poisoning he shall send to the medical officer of health a certificate stating (*a*) the name, age, and sex of the patient, and the address; and (*b*) particulars of the food poisoning.

The main object of Section 17 is to ensure that the M.O.H. is informed of outbreaks of illness occurring in his district and believed to have been caused by food. Although food poisoning is not defined in the Act of 1938, the Minister does not think that notifications under Section 17 need include cases in which food causes an infectious disease which is otherwise statutorily notifiable as such. In practice this has not happened except on occasions when cases of illness clinically and epidemiologically indistinguishable from food poisoning have been so notified but have proved on investigation to be cases of bacillary dysentery. This is unavoidable, and in general the experience of the last 10 years has shown that the notification of food poisoning has achieved the purpose intended—namely, that circumstances requiring further investigation and action of a kind which a general practitioner cannot be expected to undertake are brought promptly to the notice of the local M.O.H., who can then enlist the help of the Public Health Laboratory Service.

The Registrar-General has requested medical officers of health from the beginning of 1949 to include the notified cases of food poisoning in their weekly returns and also to make a quarterly return of the total of such cases amended by reason of corrected diagnoses. The publication of these figures at regular intervals by the Registrar-General may help to bring to light hitherto unrecognized factors in the causation of food-borne disease.

### Discussion of Table

In *England and Wales* a decrease was recorded in the notifications of measles 854, whooping-cough 147, acute pneumonia 88, and typhoid fever 30. There was an increase in the incidence of scarlet fever 95, cerebrospinal fever 23, and dysentery 18.

A fall in the incidence of measles was reported in most areas; the largest falls in notifications were Southampton 116 and Middlesex 100. The only notable exception to this general trend was a rise of 190 in Kent.

A small rise in the incidence of scarlet fever occurred in the South and North and a slight fall in the Midlands; the only large variation in local returns was an increase of 43 in Lancashire.

There were small variations in the notifications of whooping-cough, the largest being a decrease of 91 in the total for the south-west counties.

The largest outbreaks of dysentery were Lancashire 30 (Oldham C.B. 27) and Yorkshire West Riding 15 (Sedbergh R.D. 10). The next largest return was Cornwall, Bodmin M.B. 7.

In *Scotland* there was an increase of 51 in the notifications of scarlet fever, and decreases were recorded for whooping-cough 21 and measles 16. The rise in the incidence of scarlet fever was confined to the western area. Notifications of dysentery in Glasgow increased from 14 to 25.

In *Eire* there were decreases in the notifications of measles 14, scarlet fever 12, and diarrhoea and enteritis 9. In Dublin C.B. an increase of 26 was recorded in the notifications of measles.

In *Northern Ireland* an increase of 33 in the notifications of measles was the chief feature of the returns. The incidence of measles increased in County Tyrone 30, Belfast C.B. 20, and County Antrim 10; in the remaining areas a decrease was reported.

### Quarterly Return for Eire

During the December quarter of 1948 the birth rate was 20.0 per 1,000, which was 0.3 below the rate for the fourth quarter of 1947. The infant mortality rate was 48 per 1,000 registered births, being 17 below the rate for the preceding December quarter. The general death rate was 11.4 per 1,000 and was 0.2 below the rate for the preceding fourth quarter.

For the whole year the birth rate was 21.9 per 1,000 and was 1.3 below the rate for 1947. The infant mortality rate was 49 per 1,000 registered births and was the lowest rate ever recorded. The general death rate was 12.2 per 1,000, and this also was the lowest ever recorded.

The death rate from tuberculosis was the lowest on record. Deaths from pulmonary tuberculosis numbered 2,398, and from other forms of tuberculosis 619; these figures were 433 and 250 respectively below the totals for 1947. Deaths attributed to the principal epidemic diseases numbered 651 and included 340 from diarrhoea and enteritis in infants under 2 years (80 in Dublin C.B.); 196 from whooping-cough; 61 from measles; 31 from diphtheria; and 14 from typhoid fever.

### Week Ending May 21

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,008, whooping-cough 2,824, diphtheria 92, measles 8,478, acute pneumonia 441, cerebrospinal fever 34, acute poliomyelitis 11, dysentery 55, smallpox 6, paratyphoid 8, and typhoid 4.

# Universities and Colleges

## UNIVERSITY OF CAMBRIDGE

In Congregation on May 28 the honorary degree of D.Sc. was conferred on Viscount Addison, K.G., P.C., M.D., F.R.C.S., Lord Privy Seal and Chairman of the Medical Research Council; Professor C. F. Cori, professor of biochemistry in the Washington University School of Medicine; Sir Charles Harington, Ph.D., F.R.S., Director of the National Institute for Medical Research; Kaj Linderström-Lang, Director of the Carlsberg Laboratory, Copenhagen; Professor A. W. K. Tiselius, professor of biochemistry in the Royal University of Uppsala; and Professor Jacques Tréfouël, Director of the Institut Pasteur.

## UNIVERSITY OF LIVERPOOL

The following candidates have been approved at the examination indicated:

DIPLOMA IN TROPICAL MEDICINE AND HYGIENE.—R. Buri, J. A. Byrne, H. A. Charchafchi, M. G. Corcos, E. J. Fleischer-Djoleto, W. J. Foote, J. Gemmell (recommended for the Milne Medal in Tropical Medicine), J. Haworth, J. C. V. Murphy, W. L. Palmer, D. Phukan, G. Pringle, K. L. Stuart (recommended for Warrington Yorke Medal in Tropical Hygiene), S. W. Thomson, R. C. Troup.

## UNIVERSITY OF SHEFFIELD

At a meeting of the University Council held on May 20 the following appointments to part-time posts were made: *Lecturer in Social and Industrial Medicine*, Dr. James Sharpe; *Clinical Teacher in Obstetrics and Gynaecology*, Mr. David H. Lees; *Clinical Teacher in Surgery*, Mr. R. B. Zachary.

The following resignations from the posts indicated in parentheses were received: Dr. J. H. Bowie (Lecturer in Bacteriology); Dr. J. Maclean Smith (Tutor in Medical Pathology); Dr. T. Stapleton (Tutor in Child Health); and Dr. Joan Laird (Research Assistant in the Department of Medicine).

# Medical News

### Association of Scientific Workers

Lord Boyd-Orr has been elected president of the Association of Scientific Workers.

### Scholarships in Norway

The Norwegian Government is offering two scholarships to British university graduates or students intending to graduate this year. A knowledge of Norwegian is desirable though not essential. The scholarships are tenable for the academic year Sept. 1, 1949, to June 15, 1950. Applications should be sent before June 13 to the Controller, Education Division, The British Council, 3, Hanover Street, London, W.1.

### Visit of Italian Pathologist

Professor Guido Vernoni, Director of the Rome Institute of General Pathology and Professor of Pathology in the University of Rome, is spending a fortnight in Britain under the auspices of the British Council visiting pathology and biochemistry laboratories. He lectured on "The Pathogenesis of Cancer" at the Chester Beatty Research Institute on May 23 and on "The Pathogenesis of Fevers" at the Royal Society of Medicine on May 24.

### Memorial to Army Nurses

Field-Marshal Sir William Slim, C.I.G.S., unveiled on May 28 at the Queen Alexandra's Military Hospital, Millbank, a memorial plaque to the nurses of Queen Alexandra's Royal Army Nursing Corps who lost their lives during the war of 1939–45.

### International Health Control

The Public Health Committee of the Brussels Treaty Permanent Commission has simplified the health control measures for those travelling by sea or air between Britain, France, Belgium, Holland, and Luxembourg. Each country will inform the others of all diseases notifiable in its territory, and provide a list of its main seaports and airports, the names, addresses, and telephone numbers of the medical officers in charge, and details of the sanitary equipment at each port. The countries will adopt a uniform type of warning postcard on which passengers landing in an "infected" area or from a "suspected" ship state the address to which they are going.

### The Centenary of the Brompton Hospital

It is hoped to hold a dinner in November of this year to celebrate the centenary of the Brompton Hospital. All those who have been on the medical staff or residents of the hospital who would like to be present at the dinner are asked to send their names and addresses to the House Governor, who will in due course give them further details of this notable occasion.

### Society for General Microbiology

At the annual general meeting of the society the following were elected officers for the coming year: *President:* Professor J. W. McLeod, F.R.S.; *Hon. Treasurer:* Mr. H. J. Bunker; *Hon. Secretaries:* Dr. J. G. Davis (general) and Dr. W. E. van Heyningen (meetings). Full particulars of the work of the society may be obtained from Dr. Davis, 35, Villiers Road, Southall, Middlesex.

### Register of Chiropodists

The 1949 Register of Chiropodists has now been published and medical practitioners can obtain copies free on application to the Registrar of the Board of Registration of Medical Auxiliaries, Tavistock House (North), Tavistock Square, London, W.C.

### Honoured by Medical Library Association

Mrs. Eileen R. Cunningham, Librarian of Vanderbilt University School of Medicine, is the first recipient of the Medical Library Association's Marcia C. Noyes Award—a silver tray—in recognition of her outstanding achievements in medical librarianship. The award is named after one of the Association's charter members and its first woman president. A past president of the Medical Library Association (1947–8), Mrs. Cunningham is the author of *Classification for Medical Literature*, now in its third edition, as well as many papers on medical librarianship, medical bibliography, and medical history.

### Medical Statistics

The General Register Office states that the classification of occupations to be used for the 1951 census will be similar to the one used for 1931. There are about 600 unit groups classified in 28 main groups. Each unit group has a three-figure code number. The Press Officer at the Ministry of Health can give further information on

e classification to those concerned with medical statistics. By rrangement with the World Health Organization H.M. Stationery ffice is obtaining copies of the *International Statistical Classification f Diseases, Injuries, and Causes of Death*. It will be published in wo volumes and will replace the *Manual of the International List of auses of Death* and the *Provisional Classification of Diseases and njuries* issued by the Medical Research Council. The Ministry urges l hospitals to use this list, particularly in connexion with the ational morbidity inquiry. One copy is being sent to regional ospital boards and boards of governors for each of their hospitals aking part in the inquiry. Information about the new list may be btained from the General Register Office, Somerset House, Strand, ondon, W.C.2.

**Wills**

Mr. Lionel Colledge, of Upper Wimpole Street, London, W.1, left 58,682. Dr. Mul Raj Soni, of Withington, Manchester, left 27,327; Dr. John Rea Henry, of Blaby, Leics., £13,100; and Dr. eorge Williamson, of Murtle, Aberdeenshire, £48,741.

## COMING EVENTS

**Royal Free Hospital School of Medicine**

The Duchess of Gloucester will present the prizes and certificates warded by the Royal Free Hospital School of Medicine in the everidge Hall, Senate House, University of London, Malet Street, .C., on Wednesday, June 8, at 3 p.m.

**Medical Superintendents' Society**

The annual general meeting of the Medical Superintendents' Society ill be held at B.M.A. House, Tavistock Square, London, W.C., on hursday, June 9, at 10 a.m. On Friday, June 10, also at B.M.A. ouse, there will be a conference to discuss "The Problem of the hronic Sick Patient." The annual dinner of the society will be held t Frascati's Restaurant, 32, Oxford Street, London, W., on the vening of June 10.

**British Association of Physical Medicine**

A short course of lectures on the various aspects of physical edicine has been arranged on Tuesdays and Thursdays from June 9 o July 19, inclusive, at 5 p.m. They will be suitable for candidates reparing for Part II of the Diploma in Physical Medicine. Further etails can be obtained from the honorary secretary, British Associaion of Physical Medicine, 45, Lincoln's Inn Fields, London, W.C.2.

**Consultants' Meeting at Birmingham**

There will be a general meeting of consultants in the Birmingham egion No. 12, at Nuffield House, Queen Elizabeth's Hospital, irmingham, on Saturday, June 11, at 2.30 p.m., to discuss the roposed terms of service.

**Faculty of Radiologists**

The annual meeting of the Faculty of Radiologists will be held at he University of Sheffield on Friday and Saturday, June 17 and 18. he programme is as follows: June 17, 10 a.m., annual general meetng; 11 a.m., meeting of Diagnosis Section, discussion on "The ulmonary Manifestations of Tuberculosis in Children," to be pened by Dr. R. Margaret C. Macpherson, Dr. John L. Emery, and r. Thomas Lodge; meeting of Therapy Section, demonstration on The Clinical Use of Radioactive Iodine" by Professor E. J. Wayne, r. G. W. Blomfield, and Dr. H. Miller; 2.30 p.m., meeting of herapy Section, discussion on "The Problems of Organization nvolved in the Use of Therapeutic Quantities of Artificial Radioctive Isotopes," to be opened by Dr. A. S. McFarlane on "Distriution," Dr. W. Arrol and Mr. K. Fearnside on "Production," and r. W. K. Sinclair and Dr. J. J. Nickson on "Hospital Organizaon"; 4.30 p.m., tea at and tour of Sheffield National Centre for adiotherapy; 7 p.m. for 7.30 p.m., dinner at Royal Victoria Hotel. une 18, 10 a.m., joint meeting of Diagnosis and Therapy Sections, iscussion on "Metastatic Tumours of Bone," to be opened by rofessor S. L. Baker, Dr. F. Campbell Golding, Dr. A. C. Crooke, nd Mr. G. W. Blomfield. An exhibition of radiographs, pathological emonstrations, and techniques in radiotherapy will be open throughut the meeting in the Department of Geography of the University. ull particulars of the meeting may be obtained from the secretary of he Faculty at 45, Lincoln's Inn Fields, London, W.C.2.

**Films at London School of Hygiene and Tropical Medicine**

Two films entitled "The African Schistosomiases" and "Still Waters," intended for the instruction of the medical profession and for public education respectively, will be shown at the London School of Hygiene and Tropical Medicine, Keppel Street, W.C., on Thursday, June 30, at 3 p.m. The films have been prepared by the Health and Public Relations Departments of the Government of Southern Rhodesia.

**Course in Bronchoscopy and Oesophagoscopy**

A course in the theory and practice of bronchoscopy and oesophagoscopy will be given in Paris on July 3–14 by Professor Chevalier L. Jackson and Dr. A. Soulas. Particulars may be obtained from Dr. Soulas, 184, Avenue Victor-Hugo, Paris, 16e.

**Congress of Obstetrics and Gynaecology**

The twelfth British Congress of Obstetrics and Gynaecology will be held at Friends House, Euston Road, London, N.W.1, on July 6–8. The programme is as follows: July 6, 10 a.m., Congress opened by the Minister of Health. "Modern Caesarean Section," introduced by Mr. McIntosh Marshall. 2 p.m., (1) Guest Paper—"Endometriosis," by Dr. Joe V. Meigs (Boston, Mass.); (2) "The Methods of Assay and Clinical Significance of Pregnanediol in the Urine," introduced by Professor G. F. Marrian and Dr. G. I. M. Swyer. 8.45 p.m., reception by the President and Council of the Royal College of Obstetricians and Gynaecologists at the Senate House, University of London, W.C.1. July 7, 9 a.m., meeting of the Central Committee of the Congress. 9.30 a.m., general business meeting of the Congress. 10 a.m., "Essential Hypertension in Pregnancy," introduced by Professor George W. Pickering and Professor F. J. Browne. 2 p.m., (1) "The Management of Pregnancy in Diabetics," introduced by Mr. John Peel and Dr. W. G. Oakley; (2) "Hernia of the Pouch of Douglas," introduced by Mr. Charles Read. 8–10.30 p.m., reception by the President of the Congress and the London Committee in the Zoological Gardens, Regent's Park, N.W.1. July 8, 9.30 a.m., "Modern Concepts in Diagnosis, Prognosis, and Treatment of Carcinoma of the Uterus," (1) "The Diagnosis of Uterine Cancer by Cytology," by Dr. J. Ernest Ayre (Montreal); (2) "Pre-cancerous Changes in the Cervix," by Professor Gilbert I. Strachan; (3) "Prognosis Based on Biopsies," by Dr. A. Glucksmann; (4) "Partial and Complete Pelvic Exenteration for Uncontrolled Uterine Cancer: a Preliminary Report," by Dr. Alexander Brunschwig (New York); (5) "Surgical Treatment of Carcinoma of the Cervix," by Dr. Joe V. Meigs (Boston, Mass.). A discussion will follow, to be opened by Mr. Victor Bonney (London), and continued by Professor Subodh Mitra (Calcutta) and others. 2 p.m., discussion on "Maternal Mortality," introduced by Sir William Gilliatt. 7.15 p.m. for 8 p.m., Congress banquet at Guildhall, City of London. Those intending to be present are asked to notify the honorary secretaries of the congress as soon as possible at 58, Queen Anne Street, London, W.1. The cost of the banquet at the Guildhall is 45s. Applications for ladies' tickets should reach the honorary secretaries by June 20. Associate membership entitling the holder to attend the meetings costs one guinea.

**Medical Association of Eire**

The annual meeting of the association will be held at University College, Cork, on July 7–9. The meeting will be addressed on July 7 by Dr. Charles Hill, secretary of the British Medical Association.

## SOCIETIES AND LECTURES

**Monday**

EDINBURGH UNIVERSITY.—At Physiology Lecture Theatre, University New Buildings, Teviot Place, Edinburgh, June 6, 5 p.m., "*The Renaissance and its Teaching*," by Dr. Douglas Guthrie.

**Tuesday**

EDINBURGH POSTGRADUATE BOARD FOR MEDICINE.—At Anatomy Lecture Theatre, University New Buildings, June 7, 5 p.m., "*Tuberculosis of Joints*," by Professor Walter Mercer.

INSTITUTE OF NEUROLOGY, National Hospital, Queen Square, London, W.C.—June 7, 5 p.m., "*Surgical Principles in Intracranial Surgery*," by Sir Hugh Cairns.

INSTITUTE OF UROLOGY.—At St. Paul's Hospital, Endell Street, London, W.C., June 7, (1) 11 a.m., "*Pathological and Serological Diagnosis of Gonorrhoea*," by Dr. R. Thomson; (2) 5 p.m., "*Disturbances of Micturition Due to Nervous Disease and Injury*," by Mr. Harland Rees.

LONDON: UNIVERSITY COLLEGE.—At Physiology Theatre, Gower Street, W.C., June 7, 5.15 p.m., "*Muscular Contraction*," by Professor A. V. Hill.

WRIGHT-FLEMING INSTITUTE OF MICROBIOLOGY, St. Mary's Hospital Medical School, Paddington, W.—June 7, 5 p.m., "*Electron Microscopy of Bacteria and Viruses*," by Dr. A. S. McFarlane.

**Wednesday**

INSTITUTE OF UROLOGY.—At St. Paul's Hospital, Endell Street, London, W.C., June 8, (1) 11 a.m., "*Local Complications of Gonorrhoea in the Male*," by Dr. A. H. Harkness; (2) 5 p.m., "*Infertility of the Male*," by Mr. A. R. C. Higham.

LONDON: UNIVERSITY COLLEGE.—At Physiology Theatre, Gower Street, W.C., June 8, 4.45 p.m., "*Selective Toxicity with Special Reference to Chemotherapy*," by Professor Adrien Albert.

SOUTH-WEST LONDON MEDICAL SOCIETY.—At Bolingbroke Hospital, Wandsworth Common, S.W., June 8, 8.15 p.m., "*Modern Treatment of Heart Disease*," Bolingbroke Lecture by Dr. R. E. Rodgers.

**Thursday**

CLINICAL SOCIETY OF THE ROYAL FREE HOSPITAL, Gray's Inn Road, London, W.C.—June 9, 5.15 p.m., "*Mammaplasty*," by Dr. Ernesto F. Malbec (Director of Plastic Surgery at Hospital of Ramos Mejia, Buenos Aires). Visitors welcomed. (*Change of date.*)

EDINBURGH UNIVERSITY.—At Anatomy Theatre, University New Buildings. Teviot Place, Edinburgh, June 9, 5 p.m., "*Mental Deficiency and Social Medicine*," Honyman Gillespie Lecture by Dr. R. Bailey.

INSTITUTE OF UROLOGY.—At St. Paul's Hospital, Endell Street, London, W.C., June 9, (1) 11 a.m., "*Ano-rectal Gonorrhoea*," by Dr. A. H. Harkness; (2) 5 p.m., "*Fistula of the Bladder (acquired)*," by Mr. F. R. Kilpatrick.

LONDON: UNIVERSITY COLLEGE.—At Physiology Theatre, Gower Street, W.C., June 9, 4.45 p.m., "*Some Aspects of Nitrogen Metabolism in the Mammal*," by Dr. J. S. Bach.

LONDON UNIVERSITY.—At Institute of Neurology, National Hospital, Queen Square, London, W.C., June 9, 5 p.m., "*Surgical Principles in Intracranial Surgery*," by Sir Hugh Cairns.

RESEARCH DEFENCE SOCIETY.—At Royal Society of Tropical Medicine and Hygiene, 26, Portland Place, London, W., June 9, 3.15 p.m., annual general meeting; "*Physiological Research and the Vivisection Act*," Stephen Paget Memorial Lecture by Professor C. Lovatt Evans, F.R.S.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, London, W.C.—June 9, 5 p.m., "*The Mind of Mechanical Man*," Lister Oration by Professor Geoffrey Jefferson, F.R.S.

ST. GEORGE'S HOSPITAL MEDICAL SCHOOL, Hyde Park Corner, London, S.W.—June 9, 4.30 p.m., "*Psychiatry*," lecture-demonstration by Dr. D. Curran.

## APPOINTMENTS

Dr. Hugh W. Jones has been appointed Director of the Department of Pathology and Clinical Laboratories of the Mason Clinic, Seattle, Washington, D.C., U.S.A.

Dr. Jones was formerly Chief of Pathology at the Walter Reed General Hospital, Army Medical Centre, Washington.

FULHAM AND KENSINGTON HOSPITAL MANAGEMENT COMMITTEE.—The following appointments at Fulham Hospital are announced: *Senior Surgical Registrar*, N. N. Tereshchenko, F.R.C.S. *House-surgeon*, Margaret V. Bickerton, M.R.C.S., L.R.C.P.

MILLER, RICHARD GRAHAM, M.B., Ch.B., D.P.H., Divisional Medical Officer North-East Division, National Coal Board.

PARKER, THOMAS, L.R.C.P. & S.Ed., L.R.F.P.& S.Glas., D.P.H., Administrative Medical Superintendent to Board of Management for Paisley and District Hospitals.

## BIRTHS, MARRIAGES, AND DEATHS

### BIRTHS

**Buchanan.**—On May 16, 1949, at Birmingham, to Joan (née Macauley), wife of Ian Buchanan, a daughter.

**Klidjian.**—On May 22, 1949, at Queen Victoria Nursing Institute, Wolverhampton, to Doreen Elizabeth, wife of Wing Commander A. Klidjian, F.R.C.S., a son.

**Stone.**—On May 19, 1949, at 12, Avenue Road, London, N.W., to Lynn, wife of Dr. L. D. Stone, of Upminster, a sister for Gillian—Jacqueline Susan.

### MARRIAGES

**Carlile—Hillary.**—On May 14, 1949, at St. Martin-in-the-Fields, London, W.C., James Patton Carlile, M.B., B.S., D.R.C.O.G., Ryton-on-Tyne, to June St. Hilaire Hillary, B.Sc., Auckland, New Zealand.

**Hollman—Large.**—On May 28, 1949, at the Chapel Royal, H.M. Tower of London, Arthur Hollman, M.B., M.R.C.P., to Catharine Elizabeth Large, M.B., B.S.

### DEATHS

**Blurton.**—On May 5, 1949, at 4, Valley Road, West Bridgford, Notts, John Frederick Blurton, M.B., J.P., aged 87 years.

**Bolan.**—On May 21, 1949, at Upper Grange, Hinstock, Shropshire, Thomas Droston Lawson Bolan, L.R.C.P.&S.Ed., L.R.F.P.S.Glas., late Wing Commander, R.A.F.

**Cummins.**—On May 26, 1949, at Oxford, Stevenson Lyle Cummins, C.B., C.M.G., LL.D., M.D., Colonel, late A.M.S., of the Priory, Thaxted, Essex.

**Etties.**—On May 21, 1949, at Queen Alexandra's Military Hospital, Millbank, London, S.W., Donald Cotman McCulloch Etties, M.B., B.S., F.R.C.S., Lieutenant-Colonel, R.A.M.C.

**Grellier.**—On May 27, 1949, at Royal East Sussex Hospital, Hastings, Norman Grellier, M.C., M.R.C.S., L.R.C.P., D.M.R.E., L.D.S., R.C.S., aged 62.

**Ratcliffe.**—On May 22, 1949, at Southend General Hospital, Jemima Brown Ratcliffe, M.B., Ch.B., J.P., of 1, Tudor Way, Hockley, Essex.

**Spears.**—On May 20, 1949, suddenly, at his home, 109, Lavington Road, Worthing, Robert Spears, L.S.A., late of West Green, London, aged 70.

**Webb.**—On May 23, 1949, at 4, Clarendon Villas, Cheltenham, John Curtis Webb, M.A., M.B., B.Chir., aged 80.

**Whiteside.**—On May 19, 1949, Henry Cadman Whiteside, C.B., M.R.C.S., L.R.C.P., Surgeon Rear-Admiral, R.N. (retired), of 20, Festing Road, Southsea.

**Wimberley.**—On May 26, 1949, at 53, Fountainhall Road, Edinburgh, Charles Neil Campbell Wimberley, C.M.G., M.B., C.M., Colonel, I.M.S. (retired), in his 82nd year.

# Any Questions?

*Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.*

### Abdominal Pregnancy

**Q.**—*A recent question on abdominal pregnancy (March 5, p. 422) led me to read more about the condition. In none of the books consulted was a description of the diagnosis given. How is the diagnosis made, and what are the difficulties in diagnosis?*

**A.**—The diagnosis can be difficult, and the condition is frequently overlooked if only because its rarity tends to put it out of mind. Many cases are recorded in which the true state of affairs was discovered only when an attempt was made to induce labour by rupturing the membranes. The patient may recall an attack of one-sided lower abdominal pain together with a little vaginal bleeding, regarded perhaps as threatened abortion, early in pregnancy—that is, at the time of extra-tubal rupture. Throughout pregnancy there may be attacks of abdominal pain with faintness and perhaps occasional decidual bleeding from the uterus. The patient sometimes complains of an undue amount of nausea, vomiting, flatulence, or colic, and the foetal movements cause pain; the pregnancy is "uncomfortable." The abdominal tumour tends to be asymmetrical and its borders are less well defined than those of an intra-uterine pregnancy. Contrary to the common account, foetal parts are not as a rule more easily palpated, but malpresentations are common. The gestation sac, unlike the uterus, does not contract, and another swelling—the uterus—may be felt alongside it.

On bimanual examination the key to diagnosis is identification of the uterus, moderately enlarged, separate from the main swelling. Ballottement of the presenting part cannot be elicited in the uterus. At the time of spurious labour the foetus dies, the cervix may open to some extent and the decidua be cast off. *X*-ray examination is often helpful. Instead of the uterine shadow around the foetus there may be translucent areas due to gas in the neighbouring bowel. The foetus is often in an abnormal position and shows unusual attitudes—"the flying foetus." Hysterosalpingography can confirm the diagnosis, but is rarely employed so long as there is any possibility that the pregnancy is intrauterine.

### Urticarial Reaction to Penicillin

**Q.**—*How common are urticarial reactions to penicillin, and are they likely to recur if a second course of penicillin is necessary? A patient received 200,000 international units of penicillin intramuscularly daily for eight days for a carbuncle in the neck. Ten days after the first injection a severe urticarial and angioneurotic oedema appeared. What is the position with respect to giving the patient penicillin again, either alone or with antihistamine drugs?*

**A.**—Urticarial reactions to penicillin occur in a small proportion of cases. The rash usually clears up satisfactorily even if the penicillin is continued, and as a rule does not recur if a second course is given (Lyons, C., *J. Amer. med. Ass.*, 1941, **123**, 1007). Intradermal tests with penicillin often have negative but occasionally positive results. An injection of 0.1 ml. of a solution of penicillin in a strength of 1,000 units per ml. of physiological saline may be made intradermally in the forearm, with 0.1 ml. of saline as a control in the other arm. The test areas should be examined after one hour and after 24 hours. If there is no marked weal or flare the test may be repeated in a strength of 10,000 units per ml. If the reactions to both tests are negative it may be assumed that urticaria is unlikely to recur should a further course of penicillin be given. If either is positive and a further course of penicillin is required it is worth while giving antihistamine drugs from the beginning of treatment.

### Absence of Abdominal Reflex

**Q.**—*Is the loss of the abdominal reflex, either on one side or on both, evidence of an organic lesion?*

**A.**—Bilateral absence of the abdominal reflexes does not necessarily indicate organic disorder, and is common in people beyond middle life, particularly if they are obese. The abdominal reflexes are very often lost after pregnancy, and in otherwise normal people they are occasionally absent or very difficult to obtain. Asymmetry of the reflexes is always evidence of organic disorder, but it must be borne in mind that this disorder may be anywhere in the structures subserving the reflexes, so that local injury—including abdominal operations—may lead to abolition of the reflex from one segment of the abdomen. After local causes have been excluded, asymmetrical loss of the abdominal reflexes may be taken as evidence of disorder in the peripheral or central nervous system, but usually such a diagnosis would not be made on the evidence of abdominal reflexes alone. Assessment of their significance can usually be helped if there is associated asymmetry in the tendon reflexes or the plantar responses, or in the appreciation of sensory stimulation. Most neurologists make use of the abdominal reflexes in demonstrating a mild lesion of the pyramidal tracts based on observation of disturbed function or of a disorder of the deep reflexes, rather than the other way round.

### Carriers of Salmonella

**Q.**—*What is the best method of clearing up a Salmonella enteritidis infection in the intestine? A girl aged 11, who had diarrhoea for a fortnight and is now quite well apart from an occasional evening temperature of 99° F., is passing heavily infected stools. I understand she is likely to remain a carrier for many months unless this is treated. What treatment would you advise?*

**A.**—Persistent carriers of the salmonella food-poisoning organisms are rare, but a fair proportion of cases excrete the organism for four to twelve weeks after the acute infection. These convalescent carriers become negative spontaneously, and it is doubtful if any local bowel therapy will accelerate the cure, since the focus of infection is probably the gall-bladder. However, a course of succinyl sulphathiazole or other poorly absorbed sulphonamide may be tried, while laxative or cholagogue medicaments may be prescribed to encourage a good flow of bile. If the carrier state persists for twelve weeks or longer the patient may become a permanent or chronic carrier. In such cases duodenal bile-stained contents should be aspirated to find out if the gall-bladder is in fact the seat of infection. If it is, it will usually be diseased, and cholecystectomy, which should carry very little operative risk in a healthy child of 11 years, may be advised with good prospects of cure.

The salmonella bacteria of the food-poisoning group are more resistant to penicillin and streptomycin than is the typhoid bacillus, and for this and other reasons chronic carriers of these organisms are unlikely to respond to treatment by antibiotics.

### Nocturnal Frequency in a Diabetic

**Q.**—*A patient aged 68 has had diabetes mellitus for twenty years, and despite 80 units of insulin daily has a fasting blood sugar level of over 200 mg. per 100 ml. He was for two months recently in bed with angina pectoris. He dreads the nights because he is unable to sleep, as he has to rise every two hours to urinate. What treatment do you advise to help him get a good night's rest?*

**A.**—Further investigations are necessary before a diagnosis of the cause can be made. The question of enlarged prostate, either benign or malignant, and any other obstruction at the neck of the bladder, must first of all be excluded by a competent genito-urinary surgeon. If no abnormality is present, it is possible that the patient's blood sugar level during the night is very low indeed, as hypoglycaemia sometimes causes great frequency of micturition. The fact that the blood sugar level is over 200 mg. per 100 ml. fasting does not exclude the possibility that it may be very low between midnight and 8 a.m. If hypoglycaemia is the cause, an extra 10 to 15 g. of carbohydrate on going to bed will prevent the hypoglycaemia, and a further 15 g. of carbohydrate could be taken later on in the night if the patient is still troubled by frequency.

### Pain after Coronary Thrombosis

**Q.**—*Is short-wave diathermy of value in relieving the pain often present after an acute attack of coronary thrombosis? This pain may be in the substernal, submammary, cervical, or suprascapular region. Is there any contraindication to this form of treatment? For how long should it be continued? Can you suggest any drugs for the same purpose? Nitrites have been found not to give relief. The patient I have in mind is aged 53, with a blood pressure of 125/85 mm. Hg.*

**A.**—Pain, apart from angina pectoris or a cardiac neurosis, is an uncommon sequel to an acute attack of coronary thrombosis. In the case mentioned the pain is not described as intermittent, nor is it affected by nitrites, so that angina of effort is unlikely. Its distribution is widespread for the pain of a cardiac neurosis, but if the pain during the thrombosis occurred over this area then this diagnosis is quite possible. Causes in the skeletal and muscular systems giving rise to referred pain in this area should be looked for, and, if none is present, reassurance and sedative drugs, such as phenobarbitone with theobromine and belladonna, should be tried. Short-wave diathermy has been used for the pain of angina of effort, with varying results. It is of little use, however, in cases following coronary thrombosis.

### Dyspareunia

**Q.**—*A married woman aged 26 complains of difficulty in coitus. She is keen to have a child, but some shock when she was 9 seems to have created a psychological reaction. I thought that graded glass vaginal dilators might help, but she wonders whether there is any danger of their breaking and has heard that they are painful in use. How should these dilators be employed, and should cocaine ointment be used with them, or would this be likely to have any adverse effect?*

**A.**—Graduated glass or plastic vaginal dilators might well be helpful, but it is doubtful whether a patient of this type will be able to use them herself without first being shown how to do so by a doctor or nurse. The risk of their breaking is negligible. The smallest dilator should be passed first, and only when this can be done easily should the next size be tried. Any difficulty due to muscle spasm can be minimized if the patient adopts the dorsal position with the knees drawn up and concentrates on abducting the thighs. The muscle usually relaxes in response to gentle but firm continuous pressure on the dilator, and the dilator should be left in place for about fifteen minutes. Having reached the largest size, the dilator should be used once or twice daily, and left in for fifteen to thirty minutes each time, for two or three weeks before coitus is attempted again. It might be passed, too, immediately before the first few attempts at intercourse. A lubricant should be used with the dilators, but cocaine or other analgesic ointments are not very helpful, because the problem is not superficial tenderness but muscle spasm associated with nervous inhibition. If cocaine is used it is likely to be absorbed in small amounts, and might therefore produce a reaction in an individual sensitive to it.

### Psychoneurosis and Neurosyphilis

**Q.**—*Is the Ministry of Pensions entitled to a frank diagnosis of "neurosyphilis" in a patient to whom they have paid a pension for psychoneurosis for the past twenty years? If not, will the interests of the patient suffer if a non-committal answer is given?*

**A.**—The first part of the question seems to be ambiguous. Presumably what is meant is that the patient, who has for twenty years suffered from psychoneurosis, has recently been found to have neurosyphilis. There does not seem any valid reason why this should be communicated to the Ministry of Pensions unless they specifically ask for it. The medical board examining the patient should be able to diagnose neurosyphilis; but if it asks for, say, the results of pathological examinations of the cerebrospinal fluid the information can hardly be withheld. It seems very unlikely that the patient has had neurosyphilis for twenty years unless he has had a considerable amount of treatment. There is no reason why a person suffering from psychoneurosis should not contract syphilis and subsequently develop neurosyphilis, but this latter could hardly account for mental symptoms lasting for twenty years, and the medical board would surely appreciate that.

### Thyrotoxicosis and Pregnancy

**Q.**—*A woman aged 35, who has had a swelling in the neck since the age of 21, has the classical signs of hyperthyroidism, but with a rise in the basal metabolic rate of only 22%. She is now five months pregnant. Is it advisable to treat such a case with thiouracil during pregnancy? Are the risks to the mother increased, and is there any risk that the foetus will be affected?*

**A.**—It is usually wise to withhold thiouracil during pregnancy, as reports suggest that the drug may lead to goitre in the foetus. The patient in question, whose basal metabolism is elevated by only 22% in the fifth month of pregnancy, cannot have a severe grade of thyrotoxicosis, and it seems doubtful whether much additional risk will be incurred by allowing her to go to term.

### Inheritance of Renal Calculi

**Q.**—*A man aged 40 has suffered from oxalate calculi in the kidneys since the age of 16. He has had operations on both sides, but has been told that more stones may form. His father suffered from the same trouble, and he has avoided marriage for fear of transmitting the tendency to his offspring. I would be glad of information about the chances of inheritance of this disability.*

**A.**—This is not an easy question to answer. The condition is relatively common, yet references to heredity in the literature are infrequent and vague. One would be tempted to dismiss inheritance as a factor of much importance and to conclude that the chances for any children of this patient are little worse than those for any random child, save that sometimes conditions in whose causation heredity appears to play little part do, very rarely, yield a history pointing to the operation of a gene in a particular family group. A fuller family history would probably help.

### Painful Nodules on Heels

**Q.**—*A woman aged 46 has for three years suffered from small painful subcutaneous nodules on the back and sides of both heels. Each nodule starts as a very tender spot, and a body the size of a pin's head can be felt, freely movable under the skin. For a month or two it increases in size and becomes less tender; at the end of three to four months it is the size of a grain of rice and comparatively painless. In the meantime another nodule has started which goes through the same slow process. The patient is otherwise in perfect health.*

**A.**—Plantar warts would seem to be the most likely cause of the signs and symptoms described, and may be treated by soaking the affected areas in 3% formalin solution for ten minutes each night for six weeks. If this is not the diagnosis, biopsy and histological examination are suggested. Xanthomatosis or calcinosis cutis are possible but rare causes of such lesions.

### Argyria

**Q.**—*In a case of argyrosis in which the pigmentation is confined to the face, conjunctivae, and neck, is the condition likely to become worse on exposure to sunlight although the drug has been stopped? What lines of treatment do you advise?*

**A.**—The discoloration in argyria tends first to affect exposed parts. It does occur on other sites and in internal organs. There is not much literature on the question raised, but experience would suggest that, once established, pigmentation is not likely to get progressively worse. There is no effective treatment.

### Bundle-branch Block and Hypertension

**Q.**—*A male aged 55 has bundle-branch block with pronounced cardiac hypertrophy and a blood pressure of 170/100 mm. Hg. The attacks of "palpitations" cause him great distress, and sometimes last a week. Can you suggest anything that might be helpful?*

**A.**—The treatment in this case should be directed to the hypertension and consequent severe myocardial damage which are indicated by the cardiac hypertrophy. The bundle-branch block and the attacks of palpitation are a sequel to damage to the conducting tissue and myocardium respectively, probably due to interference with the coronary vascular supply. There are no symptoms of bundle-branch block, and no treatment for it apart from the treatment of its cause. The attacks of palpitation may be due to the onset of complete heart-block, or more probably of paroxysmal tachycardia, fibrillation, or flutter. The exact condition should be determined by an electrocardiogram taken during an attack, the treatment being decided by its cause. This is essential.

Generally the patient should exert himself only within his cardiac reserve, and avoid undue fatigue, excitement, alcohol and tobacco. He should have phenobarbitone gr. 1 (65 mg.) twice a day, "cardophylin" 0.2 g. three times a day, and be adequately controlled by digitalis. He should avoid cause known to induce attacks. For the attack, if due to paroxysmal tachycardia, experiments to discover a mechanism to cut short the attack should be tried, such as carotid-sinus pressure, not too vigorously undertaken in such a patient, abdominal pressure, cold drinks, and other well-known procedures. For this and for paroxysmal flutter or fibrillation, quinidine 6 gr. (0.4 g.) two-hourly for five doses should be given on two or three successive days. Potassium salts and phenobarbitone should be tried at the same time. If the attack is due to complete heart-block, adrenaline may be given. This is absolutely contra-indicated should the attacks be caused by tachycardia, fibrillation, or runs of extrasystoles. The prognosis appears to be very grave.

## NOTES AND COMMENTS

**Auricular Fibrillation in the Elderly.**—Dr. MAX WINTERNITZ (Lidnad Labem, Czechoslavakia) writes: Your questioner ("Any Questions?" April 9, p. 643) is told that "the only drug likely to prevent attacks (of auricular fibrillation in a man of 64 with no other signs of cardiac disease) is quinidine 3 to 5 gr. (0.2-0.32 g.) three times a day indefinitely." While this is a recognized scheme of treatment in such patients, there are other possible ways. My patients are asked to keep careful notes on the occurrence and duration of attacks for a control period during which sedatives only are given. When the spontaneous course of the disease has been established a test dose of quinidine is given to exclude idiosyncrasy, followed by 3 gr. thrice daily. This dose is increased to 6 gr. (0.4 g.) if the smaller dose has not reduced the frequency and duration of attacks. This treatment is continued if effective; if not it is discontinued. If attacks are infrequent and/or of long duration an attempt is made to shorten the individual attack by taking quinidine after the onset of an individual attack only—3 gr. every two hours until the attack ceases. Alternative attacks are treated at first, to decide whether quinidine has any shortening effect on attacks. If quinidine should prove ineffective a single dose of pulv. fol. digitalis gr. 15 (1.65 g.) is given, followed after two days by maintenance doses of 1.5 gr. (0.1 g.) per day. This may abolish the liability to further attacks in some cases; in others permanent fibrillation will be established. Most patients of the stated age will prefer a digitalis-controlled permanent fibrillation to the insecurity of sinus rhythm with frequent paroxysms of rapid arrhythmia. If neither quinidine nor digitalis prove helpful, and if the attacks are frequent and incapacitating, an attempt with thiouracil is justified, irrespective of the presence or absence of thyrotoxic signs. The dose should be on the higher side, and treatment must be protracted, in order to reduce the B.M.R. to subnormal levels, but the proneness to fibrillation will be significantly reduced in a high percentage of patients.

**Vaccine Lymph.**—Dr. L. G. JACOB (Bracknell, Berks) writes: An even simpler method of expelling vaccine lymph from capillary tubes than that described under "Preparations and Appliances" (May 7, p. 818) is by breaking off one extremity, passing the broken end of the tube through a flame, and then warming the contained air of the other end over the flame. With care there is no risk of inactivating the lymph by heat.

Dr. E. F. BLUMBERG, of King's Road, London, has also sent us a description of this method.

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Aitiology, Westcent, London.* ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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